THE

VETERINARY JOURNAL

OCTOBER 1900.

Editorial.

THE LESSON OF THE WAR.

AN APPEAL TO THE GOVERNMENT.

THE correspondence with the Government departments which we publish in another page of the JOURNAL will go far to deepen the feeling of uncertainty, almost of despair, which animates all those who have dealings with the official world, and who valiantly essay to break through the hedges of tradition and reserve which enclose it. Our motives may be ever so good and unselfish, our aims and objects ever so high, yet we are almost certain to be baffled in our attempts to move, unaided, the great wheels of State. It is not that our rulers or our great officials are deaf to appeals for justice or impenetrable to claims that are based on reason and common sense, but simply that the Government machine is too ponderous to be easily moved. Perhaps this is inevitable; the body politic has too many vulnerable points, the creation of precedents must be carefully restricted as a possible source of danger, a simple admission of an apparently harmless principle or a trifling concession to an innocent demand may lead to wide and unexpected developments. All these facts must be kept steadily in view by our rulers. We admit all these difficulties, and we frankly concede that the Gordian knot which we and the country have before us seems almost impossible to unloose; we can only fervently hope that an Alexander may be found who will take a short and effectual way of removing the difficulty. Our readers, if they are vigilant, may do an immense deal to expedite matters, and we make an urgent appeal to them.

If the war in South Africa has conferred upon the nation one benefit greater than another, that benefit has been to point out, whilst there was still time to reform, the weak parts in our military administration. If, again, there was one point demonstrated as being weaker than another, that point has been our cavalry service. In later years it has been the habit of the civilised world to decry the importance of cavalry in modern warfare, and efforts have been made to show that the real fighting strength of a country lies in its foot-soldiers, supported by its

artillery. Horse-soldiers have come to be looked upon as elegant and brilliant but costly and unimportant adjuncts to our fighting forces. All this has been profoundly modified by our late experience in Africa. There it was found that a large body of horsemen, ever active and alert, was an absolute necessity of the situation. The consequence has been a great and sudden and almost intolerable strain on our national resources in this particular direction. Experts were dispatched at short notice to foreign countries to select and purchase horses and mules; agents of the Government were deputed to find supplies of fodder for these animals; civil veterinary surgeons were induced to enter the military service of the country and proceed, with practically no special training, to the centre of our military operations. When we learned on trustworthy authority that the Army Department could supply only some forty-seven in the Army Veterinary Department out of a total of about 129 veterinary surgeons, and that the deficiency had to be made good by the means we have stated, we confess to have experienced a feeling of considerable alarm, modified, it is true, by admiration of our country's resources and the ardent patriotism of our fellow-citizens. But as prudent men we must not go on trusting to our good fortune or to the fortuitous interlocking, so to speak, of our national resources. Such combinations may, probably will, never occur again; if we neglect the teaching of the past we do not deserve that they should occur again. Our duty is to inquire into the causes of our weakness, remedy our defects, and be humbly thankful that things were no worse.

The establishment of a Veterinary College in Ireland is a fitting opportunity for the discussion of veterinary education in general. The Government may impose upon us with its authority and mystify us with technicalities as to the raising and allocation of taxes; the plain fact remains, that in one of the great divisions of the country veterinary education is to be henceforth conducted in a State-aided institution. There is no getting away from this fact, nor ought there to be. We rejoice in the fact, we congratulate our Irish friends, and we say that they have got no more than they deserved; we are sure they will make good use of their opportunities. But does not the very brilliancy of the Government's heroic generosity to Ireland deepen the gloom of its ingratitude to England and Scotland? The action of Government is tantamount to saying, "You good people in England and Scotland have done so much for veterinary education that you may quite well be left to do more: you have shown us the way, and we have followed: you are strong—at least we hope you are—whilst we walk with uncertain footsteps: we bestow upon Ireland our blessing and £15,000: we bestow upon you our blessing, and—let us think, yes—our thanks: we commend to you the maxim, "Virtue is its own reward." Very pretty platitudes, but somehow they don't fill one's stomach, and the stomach is a very clamorous part of the man.

We wonder if the public is aware that veterinary education in this country is a matter of private enterprise, and if it realises the consequent insecurity of its foundation and the jeopardy in which the nation stands. The private individuals in question are not Rothschilds, but men who have to, at least, make both ends meet once a year. They have to make a painful study of economics whilst devoting as much time as possible to science, and naturally they find that each of these objects interferes with the other; as mathematicians would say, they tend to cancel each other out. One veterinary institution has a semi-municipal support, but even it owes its foundation, within quite recent times, to private benevolence and individual enthusiasm, and is in no pecuniary sense a national institution. Who is to guarantee it against the collapse which has more than once threatened it?

Let us calmly review the position. The War Office, amongst other deficiencies which it has to consider, has practically to reconstruct the Veterinary Department. More veterinary surgeons are required to take active duty in the field, and to form a reserve for time of need. Now it has recently and in connection with our military mishaps come to our knowledge that at least one Continental Government has a very simple and inexpensive way of providing a stock of horses for the army. It requires in time of war, let us say, 1000 horses for a particular regiment to be constantly ready, and it takes care to provide these horses, but it reflects that all flesh is grass—especially horse-flesh,—and it provides a *reserve* of 500 horses, and has 500 horses in the regiment on a peace footing. It is of course important to keep these reserve horses actively and healthily employed, and at the same time necessary to keep down taxation; so the Continental Government adopts the simple expedient of letting out its oldest horses, after they have been thoroughly trained, to private parties. These private persons give sufficient guarantees, and then have the right to use the animals for their own purposes—it may be for drawing cabs and omnibuses or other vehicles,—but the horses must be kept in good health and must be ready at all times to be returned to a given depôt within twenty-four hours when the Government gives notice to that effect. The private party thus maintains at his own expense the horses of the Government, but on the other hand has the use of the animals without any capital expenditure. We understand that after a certain number of years of maintenance the horse becomes,—in his old age shall we say?—the property of his hirer. We venture to recommend some scheme of this kind to our own Government, and we would extend it to the surgeons as well as to the horses. Young veterinary surgeons must be induced to study for the army, so as to render themselves fit to undertake in all its details the supervision of the transport of animals for use in war and the care of these animals in foreign countries and under unfavourable conditions. They need not remain permanently with

the army unless they distinctly prefer a military career, but they ought to form a reserve for time of war, and ought, in however slender a way, to be in the pay of the Government on pledge of being ready to join the army at a few days' notice. Now all this means organisation, and organisation means outlay, and outlay implies a hope of return more or less remote. Nothing ought to be left to chance; we may have succeeded in "muddling through" once, we may not succeed next time—we shall probably not succeed again if we lose the opportunity presented to us and neglect the teaching of experience. There must be systematic training, not mere empiric, hap-hazard, dilettante work. If veterinary students are to learn anything of tropical and sub-tropical diseases in animals, as their medical cousins are doing with regard to the human species, special classes must be formed and specially qualified teachers must be appointed and must be fittingly paid; if students have to learn the best means of transporting animals by land and sea they must have opportunities of studying these matters at docks and quays and railway stations, and even in carpenters' yards and smiths' shops. We assure our readers from bitter experience that the fitting up of transport vessels is not to be left to officialdom; to judge by what we have seen and heard of it would almost seem as if officialdom supposed the horse to be an animal with three legs or, say, two and a half. Well, all this reform implies Government support, and cannot, ought not to, be left to private enterprise. We cannot expect even wealthy individuals to take the matter up, however much they may be interested in the animal creation on the one hand or in military matters on the other. Such men will doubtless contribute from their resources to the support of any Government scheme, or they will have, of course, to pay their share of any necessary taxation; they may be excused if they decline to become the dupes or tools of their neighbours. Railways have their hierarchies of military organisation; their general managers are colonels of a special corps which will make its presence apparent and its influence felt as soon as there is the slightest fear of invasion, and so the organisation proceeds down to the humblest ranks of railway servants. We understand that this is no paper army, but that conferences are held periodically and plans of campaign arranged, so that within a very few hours an immense concentration of railway power could be effected. So in a minor way it must be with us also.

Some of our readers may feel the task hopeless. We do not think it is. A new Parliament is about to be elected and candidates will be glad to get votes; why not bring all our social influence to bear directly or indirectly on those candidates? The opportunity is ripe. The African War has shown how important we are, and yet what a slender hold the country has upon our gratitude. The example of Ireland is at hand, so that there can be no evasion on the score of finance. Probably the Government is

waiting for a pretext to take in hand this important scheme, which has justice, necessity, and common-sense to recommend it. Our rulers are afraid or unwilling to move; they may yield to a well-directed, hearty push. Let us remember the fable of the waggoner, and not utter idle complaints to the gods, but let us all manfully put our shoulder to the wheel.

To The Right Honourable LORD BALFOUR OF BURLEIGH,
Secretary for Scotland,
DOVER HOUSE, WHITEHALL.

MY LORD—In the Agricultural and Technical Institution (Ireland) Bill the following appears in page 6, clause 16, sub-clause (*a*):—

> "A capital sum, which shall not, save with the concurrence of the Agricultural Board, exceed *fifteen thousand pounds*, shall be applied for the purpose of providing suitable buildings, fittings, and appliances for the Royal Veterinary College of Ireland."

I venture humbly to lay before your Lordship the following facts.

There are four Veterinary Colleges in Great Britain, one in London, two in Edinburgh, and one in Glasgow.

Not one of these Colleges receives any Government or other aid, or ever has done so. The London Veterinary College is supported by subscribers, who obtain special advantages in return—by students' fees—and by professional fees earned by the staff; also receives a grant in aid of a special subject from the Royal Agricultural Society.

The Dick Veterinary College in Edinburgh is a trust of the late Professor Dick, and endowed with certain properties which realise a small sum per annum, which assists in supporting it. Its other means of support are the students' fees and the earnings by the Staff.

The New Veterinary College, Edinburgh, is owned by its founder (Principal Williams), and supports itself by its students' fees and the earnings in practice by the Principal and his assistants (members of the Staff).

The Glasgow Veterinary College is owned by its founder (Principal M'Call), and supports itself by its students' fees and the earnings in practice by the Principal and his assistants (members of the Staff).

All the three Scotch Colleges have been built specially by their founders for the teaching of veterinary science.

A few years ago, with the concurrence of the Principals of the Veterinary Colleges, the Council of the Royal College of Veterinary Surgeons (the governing body of the veterinary profession) increased the length of period of study, instituted four Professional Examinations instead of three, and much increased the severity of the Entrance Educational Examination. To this the Scotch Colleges (which have no subscribers like the London Colleges) agreed for the benefit of the profession solely, as they were fully aware that this increased severity would much diminish the numbers of students attending.

This has proved true, and I may say that the Scotch Veterinary Colleges are at the present time not being worked at a profit.

If the Scotch Colleges are about to be placed at a great disadvantage to the Veterinary College in Dublin it will simply mean their ruin.

On behalf of the Scotch Veterinary Colleges, I humbly crave your Lordship's kind consideration of their desperate position.

Edinburgh has hitherto been looked upon as the centre of Veterinary Education throughout the English-speaking world, and the leading veterinarians at home and abroad graduated there.

We do not desire that Ireland should not have a Veterinary College, but we do desire that we shall not be placed at a great disadvantage. The life earnings of some of us are sunk in the Colleges.—I have the honour to remain, your Lordship's most humble and obedient Servant,

W. OWEN WILLIAMS,
Professor at the New Veterinary College, Edinburgh.

7th July 1899.

DOVER HOUSE, WHITEHALL, *7th July* 1899.

DEAR PROFESSOR WILLIAMS—I am directed by Lord Balfour of Burleigh to acknowledge receipt of your note of this date, with accompanying statement regarding the Agricultural and Technical Institution (Ireland) Bill and the Veterinary Colleges in Great Britain.

Lord Balfour desires me to say that you have not made it sufficiently clear in your statement what it is that you wish him to do, but if you can formulate definitely the object you have in view he will then be in a position to consider whether it will be necessary to have a meeting with you.—I am, yours very truly, GEO. A. J. LEE.

W. OWEN WILLIAMS, Esq., &c. &c.

To The Right Honourable LORD BALFOUR OF BURLEIGH,
Secretary for Scotland,
DOVER HOUSE, WHITEHALL.

MY LORD—I would humbly suggest that each College should receive a grant in aid of Veterinary Education of £750 per annum, being the sum equal to the interest at 5 per cent. on £15,000, the grant to Ireland. This would then to a certain extent place us on an equal footing with the Dublin Veterinary College.—I have the honour to remain, your Lordship's most humble and obedient Servant,

W. OWEN WILLIAMS,
Professor at the New Veterinary College, Edinburgh.

7th July 1899.

To The Right Honourable ARTHUR JAMES BALFOUR, M.P.,
First Lord of the Treasury,
10 Downing Street, London.

SIR—In the Agricultural and Technical Institution (Ireland) Bill the following appears in page 6, clause 16, sub-clause (*a*) :—

> "A capital sum, which shall not, save with the concurrence of the Agricultural Board, exceed *fifteen thousand pounds*, shall be applied for the purpose of providing suitable buildings, fittings, and appliances for the Royal Veterinary College of Ireland."

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If the Scotch Colleges are about to be placed at a great disadvantage to the Veterinary College in Dublin it will simply mean their ruin.

On behalf of the Scotch Veterinary Colleges I humbly crave your kind consideration of their position.

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W. Owen Williams,
Professor at the New Veterinary College, Edinburgh.

7th July 1899.

TREASURY CHAMBERS, *20th July* 1899.

SIR—The First Lord having laid before the Lords Commissioners of Her Majesty's Treasury your application for a grant of public money to the Veterinary Colleges in Great Britain, corresponding to that which it is proposed to give to a College for similar purposes in Ireland—in reply I am to explain that the proposed grant in Ireland is to be derived not from money voted by Parliament but from the Irish Local Taxation Account. That Account, and the corresponding Accounts for England and Scotland, are supplied by the proceeds of taxes, or prescribed portions of taxes, collected by Imperial officers, and payments are made out of the Accounts to various local purposes prescribed by Statute for England, Scotland, and Ireland.

You will understand, therefore, that the Treasury is not concerned with the purposes for which such payments are made, as they do not affect the Exchequer; and any application affecting those purposes should be addressed, in the case of Scotland, to the Secretary for Scotland.

This answer disposes, so far as this Board is concerned, of your application under reply, as my Lords can hold out no hope of an application to Parliament for a vote of money in aid of the institutions in which you are interested.—I am, Sir, your obedient servant, FRANCIS MOWATT.

Professor WILLIAMS,
The New Veterinary College, Edinburgh.

SCOTTISH OFFICE, WHITEHALL, S.W.,
12th December 1899.

DEAR SIR—I am directed by Lord Balfour of Burleigh to state that he has considered the application which you laid before him in July last, and the letter from the Treasury, of which you sent a copy.

His Lordship does not think that your claim either to a grant from the Treasury or to a share in the amount available for distribution under the Local Taxation Account Acts can be maintained.

It appears from your letter that the College is owned and carried on by yourself with the help of the students' fees.[1] This renders it ineligible for a share in the amount available from the Local Taxation Account, the possible beneficiaries from which are defined by Section 2 (1) (B) of the Education and Local Taxation Account (Scotland) Act, 1892.—I am, Dear Sir, yours faithfully, G. A. J. LEE.

W. OWEN WILLIAMS, Esq., &c. &c.

VETERINARY OFFICERS AND VETERINARY SURGEONS IN CAPE COLONY, ORANGE RIVER COLONY, AND TRANSVAAL.

Veterinary Lieut.-Col. T. Matthews, Pretoria, Principal Veterinary Officer, South Africa.
Veterinary Lieut.-Col. J. T. R. Rayment, Cape Town, P.V.O. Line of Communications, Cape Colony.
Veterinary Lieut.-Col. F. Smith, Kroonstad, G.V.O. Intermediate Line of Communications.
Veterinary Captain S. J. Blenkinsop, Pretoria, G.V.O. Cavalry Division.

[1] An immaterial misunderstanding by Mr. Lee.—(W. O. W.)

Veterinary Captain A. E. Richardson, Pretoria, G.V.O. 1st Cavalry Brigade, 6th Dragoon Guards.
Veterinary Captain T. B. Drage, Pretoria, G.V.O. 2d Cavalry Brigade, Household Cavalry.
Veterinary Lieut. T. M. Hunt, Pretoria, G.V.O. 3d Cavalry Brigade, 16th Lancers.
Veterinary Surgeon T. T. Griffith, Pretoria, G.V.O. 4th Cavalry Brigade, 7th Dragoon Guards.
Veterinary Surgeon F. O. Carr, Pretoria, 10th Hussars.
Civil Veterinary Surgeon T. W. H. Masspeter, Pretoria, 8th Hussars.
Colonial Veterinary Surgeon Bray, Pretoria, Roberts' Horse.
Civil Veterinary Surgeon W. E. Taylor, Pretoria, 17th Lancers.
Civil Veterinary Surgeon Orton, Pretoria, 12th Lancers.
Civil Veterinary Surgeon A. S. Head, Pretoria, 6th Inniskilling Dragoons.
Civil Veterinary Surgeon J. M. Brownlees, Pretoria, Cavalry Transport.
Civil Veterinary Surgeon Phelan, Pretoria, 9th Lancers.
Civil Veterinary Surgeon Bowhill, Pretoria, 14th Hussars.
Veterinary Captain England, Pretoria, General Hickman's Horse.
Civil Veterinary Surgeon G. Douglas, Pretoria, 1st Battalion Mounted Infantry.
Colonial Veterinary Captain Ruddock, Pretoria, 3d Battalion Mounted Infantry.
Colonial Veterinary Captain Kendall, Pretoria, 4th Battalion Mounted Infantry.
Civil Veterinary Surgeon Bell, Pretoria, 5th Battalion Mounted Infantry.
Civil Veterinary Surgeon S. T. Stephens, 6th Battalion Mounted Infantry.
Civil Veterinary Surgeon Neal, Pretoria, 7th Battalion Mounted Infantry.
Colonial Veterinary Captain W. Stevenson, Pretoria, 8th Battalion do. (Lumsden's Horse).
Colonial Veterinary Lieut. Burrage, Pretoria, 6th Battalion do.
Colonial Veterinary Lieut. Mulvey, Pretoria, City Imperial Volunteer Company.
Civil Veterinary Surgeon S. Karslake Tasker, Pretoria, Transport, General Hamilton's Force.
Civil Veterinary Surgeon Rennie, Pretoria, R.F.A., 21st Brigade.
Civil Veterinary Surgeon Brand, Rietfontein, General Mahon's Force.
Colonial Veterinary Lieut. Melhuish, Pretoria, New South Wales Lancers and Australians.
Civil Veterinary Surgeon Whipp, Pretoria, A section, No. 3 Field Veterinary Hospital.
Civil Veterinary Surgeon Wadsworth, Pretoria, General Hickman's Mounted Infantry.
Civil Veterinary Surgeon Knight, Pretoria, R.F.A., General Hamilton's Force.
Colonial Veterinary Captain Gribben, Pretoria, Y Battalion Mounted Infantry.
Veterinary Captain Sharp, Orange River, Special duty with Ox Transport.
Veterinary Lieut. H. Sawyer, Pretoria, Headquarter Staff.
Veterinary Lieut. Shore, Pretoria, A section, No. 3 Hospital.
Civil Veterinary Surgeon Waugh, Pretoria, A section, No. 3 Hospital.
Colonial Veterinary Lieut. Sanderson, Pretoria, attached to Military Governor's Staff, New South Wales Regiment.
Civil Veterinary Surgeon Franklin, Orange River, to assist Veterinary Captain Sharp.
Civil Veterinary Surgeon Fountain, Pretoria, A section, No. 3 Veterinary Hospital.
Civil Veterinary Surgeon Wilson Barker, Pretoria, do. do.
Civil Veterinary Surgeon Barras, Springs, in charge of sick horses left by Cavalry Division.
Veterinary Major Pallin, Krugersdorp, G.V.O. 1st Division.
Veterinary Lieut. Jagger, Krugersdorp, 10th Battalion Imperial Yeomanry.
Veterinary Lieut. Parker, Krugersdorp, 5th do. do.
Veterinary Lieut. Douthwaite, Krugersdorp, 3d do. do.
Civil Veterinary Surgeon Porteous, Krugersdorp, Transport.
Civil Veterinary Surgeon Tranter, Bloemfontein, Mounted Infantry and Transport, 3d Division.
Veterinary Major Crow, Kroonstad, G.V.O. 6th Division.
Civil Veterinary Surgeon Lindsay, Bloemfontein, Transport, 6th Division, 68th Battery.
Civil Veterinary Surgeon Nicol, Senekal, 17th Brigade.
Veterinary Lieut. Southey, Pretoria, G.V.O. 7th Division R.F.A.
Civil Veterinary Surgeon T. C. Young, Johannesburg, Transport, 7th Division.
Veterinary Lieut. A. H. Lane, Lindley, G.V.O. 8th Division and Mounted Infantry.
Veterinary Lieut. E. Brown, Lindley, R.F.A., 8th Division.
Veterinary Lieut. Aulton, Lindley, 4th Battalion Imperial Yeomanry.
Veterinary Lieut. T. Rowe, Lindley, 7th do.
Civil Veterinary Surgeon Swanston, Lindley, Transport, 8th Division.
Civil Veterinary Surgeon T. Donaldson, Lindley, 16th Brigade, 8th Division.
Civil Veterinary Surgeon Dixon, Pretoria, 19th Brigade, 9th Division.

Civil Veterinary Surgeon Gamble, Pretoria, Transport, 9th Division.
Veterinary Lieut. Todd, Pretoria, G.V.O. 11th Division and Royal Field Artillery.
Civil Veterinary Surgeon Fisher, Pretoria, Transport, 11th Division.
Colonial Veterinary Surgeon Campbell, Harrismith, Brabant's Horse.
Colonial Veterinary Surgeon R. P. Thomas, Harrismith, do.
Veterinary Major F. W. Forsdyke, Bloemfontein, G.V.O. Bloemfontein and B Section No. 2 Hospital.
Veterinary Lieut. Williams, Bloemfontein, do. do.
Veterinary Lieut. Condor, Bloemfontein, Army Service Corps.
Civil Veterinary Surgeon H. C. Welch, Bloemfontein, Cavalry Depôt.
Civil Veterinary Surgeon J. R. Farrar, Bloemfontein, 43, 64, and 87 Batteries.
Civil Veterinary Surgeon H. E. T. Mason, Bloemfontein, 17th Battery and Brigade and Divisional Staff.
Veterinary Lieut. S. Morgan, Bloemfontein, C.I.V. Field Battery.
Civil Veterinary Surgeon Joyce, Bloemfontein, B Section, No. 2 Hospital.
Veterinary Major R. Pringle, Cape Town, travels on Inspection Duty on Line of Communications.
Veterinary Captain Cowper, Cape Town, Base Veterinary Officer.
Colonial Veterinary Surgeon Burns, Cape Town, Australian Bushmen.
Veterinary Lieut. Webb, Imperial Yeomanry, Maitland, Base Veterinary Hospital.
Colonial Veterinary Lieut. Green, do. do. invalided to England.
Veterinary Lieut. Sullivan, do. do. Base Veterinary Hospital.
Civil Veterinary Surgeon Aitken, do. do. do.
Colonial Veterinary Surgeon M'Namara, Rose Bank, Kitchener's Horse.
Civil Veterinary Surgeon Hodder, Green Point, General Duty.
Civil Veterinary Surgeon Gavin, De Aar, General Duty.
Veterinary Captain O'Donnel, Orange River, A Section, No. 2 Hospital.
Civil Veterinary Surgeon Laurie, Prinka, Mounted Infantry.
Civil Veterinary Surgeon G. T. Jackson, Prinka, General Settle's Force.
Civil Veterinary Surgeon W. Hill, Kimberley, Kimberley Mounted Corps.
Civil Veterinary Surgeon A. S. Lane, do. Sick Horse Department.
Veterinary Lieut. Taylor, Imperial Yeomanry, Boshof, in charge of Details.
Veterinary Lieut. W. D. Smith, Reutenburg, Special Duty, General Baden Powell's Force.
Veterinary Captain Moore, Bulawayo, Rhodesia Field Force.
Veterinary Captain Mann, Rhodesia, General Carrington's Force.
Civil Veterinary Surgeon Lund, Rhodesia, do.
Civil Veterinary Surgeon Kellet, do. do.
Civil Veterinary Surgeon Dyson, East London, Disembarking Officer.
Civil Veterinary Surgeon Molyneux, do. do.
Civil Veterinary Surgeon Steele, Aliwal North.
Civil Veterinary Surgeon Webb, Naaupoort, B Section, No. 4 Hospital.
Civil Veterinary Surgeon Pakeman, do.
Veterinary Captain Crole, Imperial Yeomanry, Thaba-Nchu, Imperial Yeomanry.
Civil Veterinary Surgeon C. E. Smith, Winberg, in charge of sick horses.
Veterinary Lieutenant Bates, Imperial Yeomanry, Vet River, 9th Battalion Imperial Yeomanry.

REMOUNT DEPARTMENT.

Veterinary Major Day, Port Elizabeth.
Civil Veterinary Surgeon Syme, do.
Civil Veterinary Surgeon Connacher, do.
Civil Veterinary Surgeon A. F. S. Jackson, do.
Veterinary Lieutenant Rose, Queenstown.
Civil Veterinary Surgeon Farrant, do.
Civil Veterinary Surgeon Graham, do.
Civil Veterinary Surgeon F. Fail, do.
Civil Veterinary Surgeon B. L. Lake, Ranfontein.
Civil Veterinary Surgeon Grist, Stellenbosch.
Civil Veterinary Surgeon Aggio, do.
Veterinary Surgeon M'Kie, Imperial Yeomanry, Maitland.
Veterinary Captain Laughlan, Kimberley.
Civil Veterinary Surgeon Glasse, do.
Civil Veterinary Surgeon Fowler, do.
Veterinary Captain F. Eassie, Bloemfontein.
Civil Veterinary Surgeon Christy, do.

Civil Veterinary Surgeon Deacon, do.
Civil Veterinary Surgeon C. Campbell, do.
Civil Veterinary Surgeon E. M. Jarvis, Kroonstad.
Veterinary Captain Lawson, Pretoria.
Civil Veterinary Surgeon Balfour, Pretoria.

Officers A.V.D.	35
Civil Veterinary Surgeons, . .	70
Colonial do. . .	12
Imperial Yeomanry, . . .	10
City Imperial Volunteers, . .	2
	129

G. MATTHEWS, Vety. Col.,
P.V.O., South Africa

PRETORIA, 22*d July* 1900.

Original Papers.

JOINT-ILL.[1]

BY CLEMENT BAXTER, ESQ., M.R.C.V.S., ELGIN.

MR. PRESIDENT AND GENTLEMEN,—The subject I am bringing before you to-day is joint-ill, technically known as arthritis, specific arthritis, specific or constitutional synovitis, and scrofulous disease of the joints

I need offer no apology for bringing it to your notice, as it is a disease of special interest to all of us, seeing that it frequently affects young and valuable animals, and in being a disease on which treatment in the past has had very little effect.

I have had cases of this disease myself, but I know no more about it than my brother practitioners ; still I thought I would like to bring up the subject so as to provoke a discussion whereby we may hear each other's experience, and perhaps be able to arrive at some conclusion as to the best mode of treatment, or at least the best preventive measures to be taken.

Joint-ill seems to have been first described on the Continent in the year 1781, and at subsequent periods until 1873, when Bollinger gave his opinion and experience of the disease, and he, in my opinion, hits the nail on the head as far as causation is concerned.

I am not aware of the disease being described by any British veterinary surgeon before the late Professor Walley wrote of it as it appeared in lambs—"Youatt in 1834 mentions it, and says that although there is nothing in its first appearance to excite alarm, it is more serious than some imagine."

Walley attributes it to an impure condition of the milk of the dam, as the result of improper management or giving food deficient in the necessary constituents of the blood. He says that when ewes are given hay and corn in addition to their ordinary food, the disease in the lambs disappears.

Roloff, who wrote in 1865, says the disease is due to a want of mineral salts in the blood, sometimes he thought it was congenital.

The latter opinion seems to coincide with that of Professor Penberthy, who in a letter to the Lincolnshire Veterinary Medical Association said

[1] Read at the August Meeting of the North of Scotland Veterinary Medical Society.

that joint ill or evil was traceable to some cause acting through the mother, and was due to the existence of micro-organisms at the time of birth.

Bollinger's observations commenced in 1869, when he had a mortality amongst foals of 72 per cent. He found that the majority of the animals were taken ill with the disease during the first three weeks of life, the others up to the fourth and sixth weeks. From his study of the disease he concluded that it was due to metastatic pyæmia, and had its beginning in purulent inflammation of the umbilical cord and vein.

In a more recent publication, after alluding to his former opinion, that the lameness or disease of the joints which attacks foals and calves during the first weeks after birth are due to purulent omphalo-phlebitis, he gives further evidence in support of his supposition.

He made post-mortems on calves in the second case, and they afforded unquestionable evidence of the existence of omphalo-phlebitis and its consequences, and says that opening of the umbilical vein direct into the posterior vena cava, instead of into the portal vein, causes a greater proportion of cases in calves than in foals.

There is no doubt that many cases of joint-ill arise from want of care at the time of birth. Frequently the mare is put into a loose box to foal, and very often this box is not of the best description in regard to its general condition, flooring, and drainage. In some cases it is a wooden erection with no paved floor, and which lies lower than the ground surface.

In a good many cases it has been used by young colts, and there is a quantity of manure left in it. The mare gives birth; the placenta may hang for a time, is finally ejected with the fluid contents of the womb, which with the urine get leave to soak into the bedding and underlying manure. The contents of the womb and the urine may not be septic at the time, but soon decompose. In many places no string or tape is ready for tying the cord, and the first piece of string that can be got hold of is used, and very often the hands which have tied it are not very clean. The navel usually gets no further attention, and daily comes in contact with the bedding and underlying manure, where decomposing processes are going on.

Pervious urachus is a cause, as here you have a wound open and ready to receive any septic matter. It is said that most recent investigators have found special micrococci in the fluids and tissues, the principal being *Streptococcus pyogenes*, *Staphylococcus pyogenes albus*, and *Staphylococcus aureus*.

Symptoms.—There is great difficulty in moving, which is often noticed before any other indication, and the animal lies a good deal, sometimes persistently; swellings appear in and around the joints, which are hot, painful, and œdematous. The animal is feverish, temperature 103° or 104° F.—or may be higher; pulse frequent and weak; mucous membranes injected; respiration, perhaps not much altered at first, becomes hurried; may or may not be diarrhœa; thirst intense. The progress of the disease is sometimes very rapid, forty-eight hours being given as the time, but this is not the usual course.

In the *Veterinary Record* of 28th July you will have noticed that Mr. E. R. Gibson of Seaham Harbour in his notes on brood mares and young stock, says that in his experience there are only two affections of the joints occurring in young animals, and arising from different causes.

The first, he says, is that arising in foals from twenty-four to forty-eight

hours old. The animal is born to all appearance healthy, sucks all right until perhaps one day old, when he is noticed lame in one or more limbs, with painful swelling about the joints, usually the hocks or shoulder. In these cases he noticed that very little urine was secreted, and on post-mortem found more or less inflammation of the tissues about the affected joints, and the capsule filled with a watery fluid resembling synovia, but without its oily appearance. The kidneys are congested, with sometimes dropsy of the capsule, bladder as a rule empty, and usually an ante-mortem clot in the left ventricle of the heart.

He says that the cause of the disease is the failure of the kidneys to carry off the urinary elements from the blood.

The second form is that occurring in older foals, from one to six weeks old, and is associated with abscesses in or about the joints. The cause is the access of pyogenic organisms through the umbilicus.

By the *Veterinary Record* of 18th August, in the discussion of a paper on joint-ill by Mr. Russell of Grantham, a Mr. Lennox had been troubled with the disease in what he called old foals, and had no belief in the entrance of septic matter by the navel. A short time ago a friend of mine told me that he had had a case of joint-ill in an older foal after the navel was healed; it took the usual course as seen in young foals, and died.

Note.—It would be interesting to know if they had been in contact with any animal affected with strangles, as I have heard of colts affected with what I would call irregular strangles, swelling about the joints, with formation of abscesses, which burst, and colt eventually died.

The disease usually ends in suppuration, which nearly always becomes general, abscesses form around the joints; there is pus formation in other regions of the body, in the muscles of the hip and along the sheaths of the tendons. If abscesses are not opened with the knife, sloughing of large portions of skin takes place, and a big angry-looking wound is the result, which is difficult to heal. The contained pus is usually of an ichorous character.

Prognosis.—The prognosis of the disease is unfavourable.

Post-Mortem.—The post-mortem appearances are blood dark in colour, sometimes effusion into thorax and abdomen, a thrombus in umbilical vein in process of decomposition, the same condition in the umbilical arteries; at other times the vein and arteries contain pus. You will find pus in the sheaths of tendons and in and around the affected joints, or a gelatinous-looking material, provided the animal has not lived very long after the disease has appeared.

Treatment.—Curative treatment is generally unsatisfactory. It has been recommended that the umbilicus should be treated with antiseptics such as perchloride of mercury, chloride of zinc, carbolic acid, boric acid, creolin, lysol, nitrate of silver, and part injected into vein or inserted by the aid of a probe covered with some absorbent material. Anodyne liniments, lotions, blisters, iodine ointment, and fomentations are also recommended. I think when animal persists in lying, fomentations do more harm than good by causing sores on the parts of the body in contact with the bed, except precautions are taken to limit the water entirely to affected part.

Medicines given are aloes, castor oil, cod-liver oil, iron, nitrate of potash, nitrous ether, camphor, opium, iodide of potassium, salicylic acid, salicylate of soda, quinine, boracic acid, carbolic acid, and sulphite of soda.

In this disease prevention is better than cure. Keep the navel as free as possible from every source of septic matter and dress daily with some antiseptic. A strong solution of carbolic acid has been recommended, which quickly shrivels up the cord. Mr. E. R. Gibson, of Seaham Harbour, advises a solution of perchloride of iron, 1 in 3 of water, to be applied every day for a few days after birth. Mr. Gooch, of Stamford, advises glycerine and carbolic acid.

I have thought that after thoroughly washing the part with an antiseptic, a thick coating of iodoform and flexile collodion, 1–10, would be a good thing. It forms a good coating for ordinary small wounds. The application of some antiseptic wool or tow after dressing, and fastened on with a bandage, would be the most rational way, but is out of the question in such young animals.

I have advised some of our clients to have the loose box intended for a mare to foal in cleaned out some time before time of foaling, and get it washed and disinfected and see that the flooring is sound and higher than the outer ground, and drainage good. After birth of foal to tie the cord with a string previously dipped in some antiseptic, or, if no antiseptic is at hand, dip in what, I think, Professor Williams has recommended—whisky.

After foal has got to its feet and the after-birth taken away from mare, clean out bedding and sweep floor clean, and sprinkle with an antiseptic and rebed. Dress navel daily with a 1–1000 solution of perchloride of mercury.

For curative treatment I have tried the administration of salicylic acid, salicylate of soda, iodide of iron, syrup of the phosphates of iron, &c., application of antiseptics to the navel, fomentations to affected joints, application of liniments, opening of abscesses and treating them antiseptically afterwards, with poor success.

In the *Veterinary Record* of 10th February Mr. Geo. Wartnaby, of Burton-on-Trent, drew attention to formalin as a curative in joint-ill, and said that he had tried it on four subjects, all of which made a good recovery.

His method was to inject hypodermically 20 minims of a 4 per cent. solution over each affected joint. He saw improvement in three of the cases two days after the first injection, repeated the injection; recovery took place without further treatment.

The fourth case, which, he says, was a bad one, required a fourth injection, and recovered.

I have had two cases of joint-ill this year, and being always ready to try a new thing when the old has not proved satisfactory, I determined to give formalin a trial. The result was a recovery and a death.

The first was a week old and was affected in both hock joints, which were swollen and tense, painful on pressure, and the animal required assistance in rising, temperature was 103·4. I noticed a piece of thin fresh twine around the navel, which I cut off, and on pressing the part a little pus escaped. The owner had noticed a little discharge that morning, and thought it would be best to keep it in, so tied it.

I made an injection of 20 minims of a 5 per cent. solution of formalin over the affected joints and syringed out the navel with a solution of about the same strength. I saw the animal two days afterwards, found joints not so tense, made a second injection and attended to navel as before; visited again in four days, foal improving. I repeated the injection and did not see him again for a week, when he seemed to be all right and quite free in

his movements, although there was a little swelling left in the joints. I saw the owner a short time afterwards, and he said the foal was keeping all right and the swellings had disappeared.

The second case was noticed a little stiff in one leg at three days old, cord quite dry. I advised the owner to dress the navel daily with some carbolic lotion he had at hand. When a week old the navel seemed a little moist. I suspected pervious urachus, and told owner to watch the animal. The following day I received a message that there was dribbling of urine from the navel. Advised owner to apply nitrate of silver. The foal began to lie continuously, his temperature varied from 101·4 to 104·4 F., joints began to swell, required assistance in rising, but was always keen to suck. Both hocks were swollen, one stifle, one elbow, one knee, and along the tendons below knee.

Gave hypodermic injection of formalin over each affected joint, and washed navel with a 5 per cent. solution of carbolic acid, and injected some carefully into it. The navel was dressed daily by the owner. I repeated the injection at intervals of a few days for four or five times, but the animal did not improve. Three days before death the stifle, which had not been affected before, commenced to swell, and in two days was ready for lancing. When opened a quart of ichorous pus escaped. Death took place the day following.

I made a post-mortem and found the umbilical vein full of pus from the umbilicus to the liver, also pus in the chest, in and around the joints, and along the sheath of tendons of one fore leg.

I did not know what to think as to the efficacy of treatment by formalin, but determined to try it again the first opportunity I got. I cannot see that making the injection over the affected joints has any advantage over making the injection in the usual way. So I intend to try the hypodermic injection of 60 minims of a 5 per cent. solution, and treat the umbilicus with a solution of perchloride of mercury. Perhaps intravenous injection would be better. In the foregoing I refer to foals. I have no experience of joint-ill in calves or other animal.

SUGGESTIONS FOR THE SUPPRESSION OF BOVINE TUBERCULOSIS.

BY W. WILLIAMS, F.R.C.V.S., F.R.S.E., J.P., PRINCIPAL OF THE NEW VETERINARY COLLEGE, EDINBURGH.

(Introductory Remarks at the Sanitary Association's Meeting at Stirling.)

IT is well known that germs of disease are constantly floating about, and when they land in suitable soil they are apt to increase and perhaps induce disease.

It is necessary, then, that all cattle should be kept in good health and condition in order that their "resisting, or 'vital power' should be at its highest, and perhaps be sufficiently powerful to destroy the virulence of disease-inducing germs." In order to do this it is necessary that, when possible, animals should have plenty of pure air, proper food, and sunshine, and that their shelters should be kept clean, and occasionally disinfected.

Unfortunately, however, no amount of care, cleanliness, drainage, or air space seem to have any restraining effect on the germs of tuberculosis—the tubercle bacillus, an exceedingly small microscopic rod—as we have repeated

instances of extensive outbreaks in the best arranged byres, even in that of Her Majesty.

Whilst, on the other hand, it is proved that no amount of carelesness or imperfect sanitary surroundings will induce the disease, provided the organism be absent.

It is not my intention to enter except very briefly into the question of air space for each cow, drainage, &c., except to state that I consider about 450 cubic feet of air space is sufficient for each cow. A larger area than this is difficult to keep warm, and if milking cattle are not kept warm the quantity of milk becomes much diminished.

The bacillus of tubercle is conveyed from one animal to another through the medium of water, air, and food and surroundings, when contaminated with the bacilli. It is therefore necessary to destroy all old wood-work, and to cleanse, disinfect, and paint wood-work in good condition, for these surroundings soon become thoroughly infected with the tubercle bacilli. Mere whitewashing, even if the limewash contain some disinfectant, such as carbolic acid, is not sufficient. Walls should be scraped, thoroughly washed with a corrosive sublimate solution, and then lime-washed, the wash to contain a disinfectant non-injurious to the cattle.

Drainage.—All underground drains within the buildings should be removed and surface drainage substituted, and the drainage conveyed to a tank through an outside underground drain, if necessary, the trap of the drain to be outside of the building.

Tuberculosis is sometimes conveyed by water. I know of one Institution containing some hundreds of patients where the drainage from the buildings containing the excreta, sputum, &c. of the patients, many of whom are tubercular, is conveyed on to the land. Here the loss from tuberculosis amongst the cattle is something enormous. I have also known the disease conveyed by refuse water from tanneries, the proprietors of which very frequently purchase dead animals—tuberculous and otherwise.

It is very necessary to trace the origin, but often this is a difficult matter, but when discovered the adage "prevention is better than cure" should be applied.

Appreciating the difficulties—nay, non-utility—of dealing with tuberculosis by ordinary sanitary precautions, Professor Bang, of the Copenhagen Veterinary College, instituted a series of experiments with the happiest results, his Government liberally providing the funds.

1. *For dealing with Non-Breeding Cattle.*

That when tuberculosis is suspected in an animal, it and all in-contact cattle should be subjected to the tuberculin test, and that all in which the reaction follows, if in good condition, be slaughtered, and the beef, if found fit, after a careful examination by a duly qualified veterinary inspector, being a Member of the Royal College of Veterinary Surgeons, be sold for human consumption.

That the animal be valued prior to slaughter, and that the difference between the value of a milch cow and that of the carcase as beef be made up by Government or divided between the Government and the owner.

That all "piners" or "wasters" reacting to the tuberculin test, or so far diseased that the test is inoperative, should be at once slaughtered and their carcases destroyed, no compensation being given, and that the neglect to report such cases to the proper authority be considered an indictable offence.

That all animals in which the tuberculin reaction indicated that they were affected, but showing no apparent signs of disease, if not fit for slaughter, should be prepared for the butcher and slaughtered when fit, having been in the meantime removed and isolated from those in which no reaction had taken place. That the healthy stock be again tested, say in three months, and the same rules applied.

2. *For Dealing with Breeding Stock.*

Upon this point Nocard writes:—"All engaged in agriculture, in breeding, rearing, feeding, or fattening cattle, ought to carry out, each for himself, the prevention of the disease. Each of them is directly interested in it. The methodical use of tuberculin, by detecting the sick animals at the outset of the disease, permits one to isolate them and to protect the sound animals from all danger of contamination.

"As the young animals mostly escape the infection, breeding would not be seriously interfered with, and the vacant spaces would be filled up in a few years. Of course a farm once made healthy ought to be protected from reinfection. To effect this it would be sufficicnt not to bring into it any new animals without having them previously tested with tuberculin."

Professor Bang proceeds as follows:—The whole herd is tested with tuberculin, and thus divided into a healthy and a tuberculous section, which are separated from one another and have separate attendants. The healthy section is tested every six months with tuberculin, and any animals which react are at once removed to the tuberculous section. Those animals of the tuberculous section which are obviously affected are got rid of; but those which are apparently healthy are used for breeding purposes as long as may be convenient, and as they will generally be fattened for slaughter before the disease is far advanced, the total condemnation of their carcases as butcher meat will not as a rule be necessary. The calves of the tuberculous section are removed to the healthy section immediately after birth, and are fed for the first day on colostrum which has been heated to 65° C. = 151° F., and subsequently on boiled milk; and this milk may be from tuberculous cows.

At first these calves were kept in separate boxes and only added to the sound section when they had successfully undergone the tuberculin test, but he now thinks that they may with safety be removed to the sound section immediately after birth, and wait till the time of the half-yearly testing (six months) with tuberculin.

In carrying out the above suggestions I think the Board of Agriculture might awake from its dormant or comatose condition and do something towards the suppression of this dire malady.

Royal Commissions have been held and a large mass of evidence collected, but the result is *nil.* Nothing has been done, not even the free supply of tuberculin.

I am strongly of opinion that tuberculin should be prepared by officials of the Government and not left in the hands of private individuals or manufacturing chemists, and that it should be gratuitously supplied to veterinarians of every district; and I also think that tuberculosis should be included in the statutory schedule of infectious diseases, and that compensation be paid to owners of cattle—except those who have allowed their cattle to become "piners" or "wasters"—when such cattle are slaughtered for the public interest.

THREE CASES OF TUBERCULOSIS OF THE SKIN DUE TO INOCULATION WITH THE BOVINE TUBERCLE BACILLUS.[1]

BY MAZYCK P. RAVENEL, M.D., OF PHILADELPHIA.

From the Laboratory of the State Live Stock Sanitary Board of Pennsylvania.

THE relation existing between tuberculosis in the bovine species and man, and the danger to man from the consumption of products containing the bovine organism, is one of the most important subjects before the bacteriologist and hygienist to-day. Bitter discussion has been waged, and extreme statements have been made on each side. Some have gone so far as to assert that residence of the tubercle bacillus in cattle so changes its character that its pathogenic power is lost for man, and *vice versa*. I quote this opinion only to show the reckless extremes to which men go in the face of strong evidence, and without a single observation to support their view. I wish to enter a protest against such unsupported expression of opinion, and to say to those who belittle the danger to man from tuberculosis in cattle, that they are at least exhibiting a lack of precaution in a case where health and life are at stake, which they would consider most foolish in a money transaction, where only dollars were in the balance. The question is one which can be finally determined only by careful observation of facts and laboratory experiments, and with this end in view I wish to record the following cases of accidental inoculation of man by the tubercle bacillus from bovine sources.

CASE 1.—Late in the year of 1896, while making a post-mortem examination on a tuberculous cow, Dr. E., a veterinarian of Pennsylvania, accidentally wounded the knuckle of his fore finger. The wound healed badly, and a nodule soon formed which showed a decided tendency to ulcerate. After some weeks he had the nodule removed, and the excised portion was sent to me for examination. Unfortunately it had been kept for some ten days in alcohol before I received it, and the diagnosis was therefore necessarily limited to the examination of sections. In the layer of tissue immediately underlying the skin was seen a mass of round cells with a considerable number of epithelioid cells, and one large giant cell containing many nuclei arranged about the periphery. I have not been able to demonstrate bacilli in these sections in an entirely satisfactory manner, but the clinical history of the case with the histologic lesions leave no doubt that it was one of tuberculosis due to inoculation. The nodule recurred after excision, and was then treated by the hot-air apparatus, which resulted in a cure. Up to the present time there has been no return of the trouble.

CASE 2.—On January 1, 1900, my assistant, Mr. G., while performing a post-mortem on a goat which had succumbed to experimental inoculation with a culture of bovine tubercle bacillus, scratched his knuckle on the broken ends of the ribs. Within a half hour the wound was washed out with a 1-1000 solution of mercuric chloride, and sealed. It healed promptly, but about three weeks after became reddened, swollen, and sensitive, especially on motion. It was protected but grew worse, and on February 27 Dr. C. H. Frazier excised the nodule, with a margin of healthy

[1] Read before the Philadelphia Pathological Society, June 14, 1900.

skin. With one-half of the nodule we inoculated two guinea-pigs subcutaneously, and the other part was prepared for sections. These sections show an infiltration process which encroaches on the papillary layer of the skin, some of the papillæ being destroyed. No typical giant cells can be made out. None of the sections were stained for tubercle bacilli. On May 5, one of the inoculated pigs died and the other was killed. Both of them showed a generalised tuberculosis involving the chest cavity as well as the abdomen. There has been no return of the lesion so far.

CASE 3.—This case has been reported before, though not to this Society, and the connection of the individual in whom it occurred with the Laboratory of the State Live Stock Sanitary Board, and the fact that the examination was made by Dr. Guitéras at the University of Pennsylvania, makes me feel justified in calling it to your attention. The patient is a well-known veterinarian of this city, who, in making an autopsy on a tuberculous cow, wounded the knuckle of his fore finger. Between three or four weeks after, the scar was noticed to be enlarged, reddened, and somewhat sensitive. As it showed no tendency to improve, but rather grew worse, some six weeks after it was first noticed it was excised by Dr. H. W. Cattell, and the wound cauterised with bromine, since which there has been no return. The nodule was examined by Dr. John Guitéras, who demonstrated its tuberculous nature by finding tubercle bacilli in sections.

The value of such cases as I have reported in proving the virulence of the bovine tubercle bacillus for man has been questioned on the ground that the lesions resulting from inoculation are usually slight and remain localised, the conclusion being forced that the bovine tuberculous bacillus has little virulence for man. The fallacy of such reasoning is shown by the fact that the history of these accidents is that, as a rule, whatever the source of the infection, the resulting lesion remains localised, and seldom leads to systemic infection. Says Osler in his "Practice of Medicine," "In man tuberculosis is not often transmitted by inoculation, and when it does occur the disease usually remains local."

All observers agree that the skin offers a very poor soil for the growth of the tubercle bacillus, as indicated by the slow evolution of skin lesions, and the small number of bacilli found in them as a rule. Chauveau failed entirely to infect calves by superficial scarifications and punctures of the skin, the nodules which sometimes formed soon disappearing spontaneously.

Even the guinea-pig, which is one of the most susceptible animals known, resists invasion by the skin. In the experiments reported by Bollinger not once in six series of experiments did he succeed in infecting guinea-pigs by cutaneous inoculation made after the manner of vaccination, though in every case the control animals, inoculated under the skin or into the peritoneal cavity, became tuberculous.

In general the solipedes, sheep, goat, swine, and dogs resist even subcutaneous inoculation with the tubercle bacillus, or develop a small tumour which passes away by resolution or by abscess, no general infection resulting.

Reports of two other cases of accidental inoculation occurring in veterinarians while making autopsies on tuberculous cows may be mentioned. In one, reported by Tscherning, of Copenhagen, cure followed removal of the growth by the knife; but in the other, reported by L. Pfeiffer, the result was not so fortunate. The patient was a man of good

family history and in good health. He wounded the thumb of his left hand, the point of the knife probably entering the articulation between the first and second phalanges. The wound healed without suppuration, but after six months a cutaneous tubercle formed about the scar, and the joint was attacked. The lungs became involved, and the man died eighteen months after the accident. The cartilage of the joint of the thumb was necrosed, and the articulation filled with a caseous mass which was extraordinarily rich in tubercle bacilli.

With these facts in view, it is manifestly unfair to consider the local character of the lesion produced by superficial inoculation of man by bovine tubercle bacilli as an indication of lessened virulence in man.

The total results of comparative inoculations of tubercle-bacillus from bovine and human origin, in almost all of the common animals, show a much greater virulence for the bovine organism than for the human, and until some good reason to the contrary is shown, it is fair to assume that this increase of pathogenic power will hold good for man also. The five cases given above prove conclusively that the tubercle bacillus is not devoid of pathogenic power for man, and while the number of cases is too small to enable us to draw sweeping conclusions, the indications are that, by this method of inoculation, the pathogenic power is at least as great as that possessed by the tubercle bacillus from human sources.

TENTH INTERNATIONAL CONGRESS OF HYGIENE AND DEMOGRAPHY.

RESOLUTIONS.

THE amphitheatre was crowded when the President, Professor Brouardel, took the chair. After declaring the meeting open, the Professor explained that as the numerous resolutions had been fully discussed in the Sections, no general discussion would be allowed, but the assembly as a whole must vote "Yea" or "Nay." He then called on Dr. A. J. Martin, the General Secretary, who read out the following long list of resolutions one by one. These were all unanimously adopted:

RESOLUTIONS ADOPTED BY THE FIRST AND SECOND SECTIONS COMBINED.

1. That each box of preserve (meat, fish, &c.) should bear distinctly marked upon it the date of manufacture (day, month, and year).

2. That detailed instructions as to the right methods of preparing such preserves should be drawn up and placed at the disposal of all manufacturers.

3. That the use of any antiseptic should be forbidden in the preservation of food and drinks.

RESOLUTIONS ADOPTED BY THE FIRST AND THIRD SECTIONS COMBINED.

1. That the supply to all communities of pure water, exposing them to no danger of infection, is one of the measures essential to the prophylaxis of a great number of diseases; that it is therefore indispensable that in every country laws should be promulgated containing efficient

clauses for the protection of the water-courses against all sources of pollution, especially those due to communities and industries.

2. That, to ensure the purity of the water used in the alimentation of towns, it is desirable that the methods of the bacteriological examination of water should be assimilated. This question shall be studied by a permanent International Commission composed of Drs. Loeffler, Fraenkel, Fódór, Gaertner, Max Gruber, Sormain, Mendoza, Miquel, Ponchet, Vaillard, Chantemesse, Calmette, A. Lévy, Rappin, Bordas, Bonjean.

3. That the Congress calls the attention of Governments to the necessity of rendering by law the inspection of meat general, obligatory, and uniform in each State, in order to include in this inspection every locality, all animals intended for food, all meat without distinction of origin or destination, as well as all establishments which prepare meat or put it on sale.

4. That, in the interests of science, of sanitary inspection, and of general economy, it would be desirable for an International Conference to draw up the basis of uniform official statistics in order to collect the facts and the results of such inspection.

5. That it is indispensable that the restrictions decided on respecting the inspection of meat should be formed on scientific data, whose value should have been proved by experience.

6. *That these data should be taught theoretically and practically in the veterinary schools which have not yet included them in their courses, and should be included among the subjects necessary to a diploma.*

7. That to make meat inspection really efficient it is advisable to oblige every district of a certain importance to have a public abattoir built and suitably arranged; all slaughtering to be compulsory in such abattoir.

8. That the small communities not too remote from larger centres should be compelled to unite and build a common abattoir; if, on the other hand, the distance from their larger centre is considerable, that these communities might be authorised to keep provisionally private slaughter-houses, but in limited numbers, with the restriction of only slaughtering in them at certain hours which shall be fixed by the respective mayors, and under their supervision.

9. *That the inspection of meat cannot offer the desired guarantee of efficiency unless conducted exclusively by veterinaries, who alone are qualified, moreover, to interfere in disputes regarding seizures, to inspect the market and cattle, to direct abattoirs, and to exercise the control which is indispensable to the service of inspection in the communities (communes).*

10. *That in any case, in such localities where at present it is impossible to organise inspection by veterinary authorities, it will be possible to provisionally employ sanitary inspectors, appointed by the local authority, holding restricted powers, taught by veterinary authorities in large abattoirs and who before being appointed shall have passed a special examination. These inspectors will only be able to act under the control of the nearest veterinary inspector, to whose decision they should immediately refer in every case in which the meat submitted to them appears to be unsound.*

11. That it is necessary that all meat for consumption be stamped or marked in a distinct manner by the authorised inspectors.

12. That meat in market-places (*viandes foraines*) and imported meat should be submitted to a fresh inspection on arrival.

13. That meat of inferior quality, but recognised as harmless, should

either at once, or after a special preparation done as much as possible in the slaughter-house itself, be sold at a reduced price in buildings allotted for the purpose, being declared as such, and under the supervision of the authority.

14. That in order to avoid slaughtering in secret, to combat epizootic disease more effectually, as well as to render meat and sanitary inspection less of an imposition to the interested parties, there is an urgent need for the introduction of general and compulsory insurance of all cattle intended for consumption.

15. That it is important that the opening and conducting of establishments which prepare or sell meat intended for food should be under the legal authority.

16. That the inspecting staff should have power to enter (day and night) these establishments to assure themselves that the administrative regulations are properly carried out with respect to the construction, arrangement, and healthiness of the buildings, the methods of preparation or manufacture, the condition and nature of the utensils, &c.

RESOLUTION ADOPTED BY THE EIGHTH SECTION.

20. That an international commission shall decide on a uniform method in the disinfection of cattle trucks for international use.

NARRATIVE OF A VETERINARY STUDENT WHILST SOLDIERING IN SOUTH AFRICA.

PRETORIAN YEOMANRY HOSPITAL,
PRETORIA, *7th August* 1900.

MY DEAR PRINCIPAL—At last I have got a good chance to write you, and will give you an outline of my movements since I left. Since the middle of April I have only been able to write five or six letters home, and to no other one have I sent the scratch of a pen, so that if I have not been able to write you, no other one has had the preference.

I wrote E. Ashworth from Stellenbosch in April, and asked him to give you a read of that letter, so will assume you heard of my movements up to that date. The day after I wrote Ashworth I had a nasty smash with my Argentine while out scouting, and entering a farm-yard he took fright, reared, smashed me with his fore and then hind feet, cutting my nose and cheek and chin pretty badly. Had eight or ten stitches put in and had to lie up for a few days. Would have been sent down to Capetown hospital but for my earnest wish to be taken on. The scar takes the form of a decided sneer on the left side of my face, but otherwise is scarcely noticeable. Wounds heal in this climate splendidly.

I left Stellenbosch on the 23d April and trained to Wellington, as I was not yet fit to ride. My comrades rode there, and we encamped close to the station, where trains were running up daily to the front, and not a few coming down, mostly under the "Sign of the Cross," with poor wounded fellows.

Wellington village itself was about 1½ miles from camp. A straggling village, well sheltered with trees, with a range of hills in the background. Most of the houses pretty villas with verandahs, and lots of glass and green

venetian blinds; creepers all over. Some little fruit still on the trees, though late in the season. Two hotels (largely patronised). I lay up quietly in camp during our few days' stay here and had my bandages off. The horses here were nearly all laid up with a sort of influenza. No high temperatures, but swelling of heads and limbs, not unlike purpura. Used pot. nit. and pot. chlorat. and did not have any deaths in my own Company. It was the only thing that I had at all suitable, that and a few ammon. carb. ball, with gentian and ginger, and they pulled round wonderful, though terribly weak for a bit afterwards.

May 3d.—Left Wellington and marched to Breede River Station, a little over 18 miles, through Banis Kloof, a lovely pass. The road runs along the sides of a range of hills. Far below is the river and another range of hills on the other side, rocky and wild. A lovely day, and the horses all managed to stagger that length. Next day, however, I had to bring about fifteen of them on by train to Worcester; the remainder marched there, about 16 miles.

The distances we covered in this campaign may seem as nothing to you, but both horses and men are ladened with accoutrements, the lightest riders with saddle, &c. scaling about 20 stones, and again, the horses were often only half fed, often and often not half fed. Many of the men indifferent horsemen, and after a few hours in the saddle became pure dead weights swinging about, giving as many crushed withers and sore backs in a week as one would see in months of every-day practice. I had quite a pleasant forenoon at Breede River till the train came, got the horses picketed out, and as the cooks were left and we got lots of fruit, we had quite a decent picnic. Got into Worcester at seven p.m. It was a larger place than Wellington, standing in a plain surrounded by hills, and though no trees in the surrounding country, the village itself was well sheltered by lots of them, which made it both cool and pretty. It boasted a hotel club, where we had a pleasant evening or two and a good supper. We were three days in Worcester, and the horses picked up wonderfully. One Sunday we spent there and I had a grand ramble over the hills. Saw lots of buck and grouse.

8th May.—Got orders six p.m. Trained up and ready eight p.m. (for Bloemfontein as we thought.) Started midnight. Next day passed Magersfontein, Beaufort West, and Prince Albert Road Stations. 10th passed De Aar. Early here. We were told our destination was Kimberley. Late in afternoon passed Belmont, Gras Pan, Enslin, and Modder River, where all the cattle were, and arrived Kimberley nine p.m., where Cecil Rhodes' sister and some ladies of that city gave us tea on the platform. We slept in the train all night. Detrained early and marched out to a beastly camp a few miles out. No tents up, as we had orders to entrain again next morning for Warrenton. Entrained six a.m. Ran out to Warrenton. Camped there about 2 miles from Fourteen Streams, where the battle was three days before.

13th, Sunday.—Had bathing parade in Vaal River, and on the Monday joined Sir A. Hunter's flying column across the Vaal, which was going on to relieve Mafeking.

This column consisted of the Union Brigade (Irish, Scotch, and Welsh Fusiliers), Scotch Yeomanry, and about eighty Imperial Light Horse.)

We along with the eighty Imperial Light Horse had to do all the scouting and screen work for the column, so that you may know we had our work.

First we had a dash on Christiana, which made us the first troops to enter the Transvaal. That was on the 15th April. Lord Roberts' column did not get in till 25th.

The first day we marched to within about 10 miles of Christiana, and that night the Boers bolted. Next morning we were on the road by 3.30 A.M. When about 6 miles off forty men were picked, myself included, to ride on and see if it was occupied. We had been sniping away at scouts all the day before, but the main bodies of the Boers were off. Entered Christiana. Ticklish work, as we were expecting an ambush any minute and did not know the enemy had retired. Got in all right after much excitement. Landrost gave up his sword and we had the flag hoisted, and when the infantry came up later we had the pipes skirling through the streets. Then we had great fun bringing in cattle, sheep, and horses, of which the Landrost swore there were none, but we saw them being driven off. Got some remounts here, and left a few fistulous wither cases on the veldt.

Seized the magazine, and had a spell then about two p.m., the first halt since we started. Captain pulled us up at a hotel. Free drinks, cigars, poached eggs, bread, and mutton, and we had not had a bite since two A.M.

The whisky and rum flew straight to their heads, and of all the dancing, laughing, chaffing—well, it beat a successful exam., a medical dinner, or even an election at Broughton Ward hollow. So you may have some idea of it.

Then we mounted, or at least all but two did—these we put on a waggon—and did a bit of patrolling, then camped about 3 miles out.

Lots of the men got Boer bandoliers, revolvers, hats, &c. &c., which had been abandoned in their haste.

Next morning reveille 2 A.M., trekked to Blesbokfontein. 18th.—Reveille 2 A.M., due north to Pokhwani. From this you will see we were back in the Colony. This raid was to draw the Boers off Mafeking, or rather off the flying column, we ourselves being the main body.

From here we marched on to Taungs, where we got a mail. This was the last letter I got from home until seven days ago, when I got seven letters which were just due. The remainder De Wet blew up when he captured the transports, &c. coming up the Orange Free State, now Orange River Colony.

From Taungs, on 22d, we marched to Madrid Farm, 26 miles, a frightful wet night, no food or fire, thence to Vryburg. 24th.—Queen's Birthday, had a bit of a review here, marched past and saluted flag. This day we had no food, and the stores in town had been all looted by Boers before.

25th.—Captain Hodge came up by first train on that line since November, with remounts.

27th.—Left Vryburg, and marched on day after day, chasing Boers, capturing rebels, commandeering cattle, &c. &c. Early starts, 3 A.M. and 4 A.M. regular, and arrived at Lichtenburgh on 5th June. Here we expected fight, but had none. We were within 12 miles of Mafeking, but did not enter it. Just brought up provision train, &c., so I expect we will get the Mafeking bar if there is one given.

Lichtenburgh was just like Worcester. In fact all the towns here are about alike. All hotels closed, only three stores, and they had only sugar, rice, and dried peaches to sell. A little bread (dark sour rye bread) was

got here. A pleasant change from our bull beef and biscuits. General Mahon joined us here from Mafeking with the Royal Horse Artillery, also Prince of Teck, Sir —— Gifford, of Rhodesian Horse fame, and several others on Staff. Left Lichtenburgh on 8th, and marched 21 miles. 9th. —Left 3.45 A.M., marched to Ventersdorp, 26 miles. Here we heard De Wet was racing us for Potchefstroom (the old capital of the Transvaal). Started 4 P.M.; we had dinner at 12 noon, and marched all night. I was extreme right flank man of the screen in advance, and had a nasty spill in the dark; pony put his foot in a hole at the gallop, and it pitch dark, rolled over me, smashed a front tooth, and crushed me pretty bad; was sick all night when I came too. I got my tackle tied up, mounted, and by good luck got in touch with the screen again. This is no easy matter, as even in daylight, if you lose sight of your nearest man and have not noted your direction, it is almost impossible to get in touch again, there is such a sameness in the country. Just undulating ground covered with coarse dry grass, kopjes, and ant-hills.

I had to join the main body as my pony was dead lame. We got into Potchefstroom about 2 P.M. next day, having been over twenty hours in the saddle, not including the halts, when one lay down in soaking wet grass on a bitter cold night. The day we got in the infantry had to entrench at once, and that night we had to stand by in case of attack.

For the next fortnight we had patrols night and day after De Wet and his crowd, but bar an occasional shot were not lucky. Here I got a lot of our horses shod and a lot of remounts. I was pretty well knocked up with my smash; just managed to crawl about and do the necessary work. Had a good few cases of glanders, both in mules and horses, which I shot.

Hundreds of Boers in town daily giving up their rifles and ammunition, —ostensibly the rifles they had used, in reality most of them old useless weapons, their Mausers being carefully hidden away for future use.

From here, on 28th, we trekked on towards Johannesburg, passing Freidrichstadt, Wolverdiend, Blaaubank, Gemsbokfontein, Klipspruit, &c. We had a convoy of 181 waggons with us, and as oxen's pace is just 3 miles per hour we had to moderate ours to the same. Arrived Johannesburg 30th. We just passed through it, camping at Germiston, 6 miles on Pretoria road from it.

Lieutenant J. M'L. Young, M.R.C.V.S., had left us before this and gone to Krugersdorp, so that I have had my company entirely to myself for the past six weeks. He has been awfully decent to me from the beginning; in fact I was the only Farrier-Sergeant he took with him from Warrenton; the rest were left for long enough there. We only passed through the outskirts of Johannesburg, but they were dreary enough, only corrugated iron buildings and mines everywhere.

Two days from Germiston we reached Pretoria, a lovely spot, surrounded by hills with their forts. I cannot think how we managed to get it so easily. Villas and houses, verandahs all round, lovely gardens, trees, &c. &c. We were two days there; got few horses shod; saw Volksraad and all big buildings, also Oom Paul's house and the famous race-course.

Oom Paul's house is just a white-washed house, green verandah and blinds, two stories, a bit garden with two sentry-boxes as bowers, a detective office on left side, and a big ugly red brick church in front and across the road. We got half an hour's notice to saddle up the second day there,

then off we trekked to Rietfontein, two days' march. Next day we were in the heart of the fighting under General Hutton of the New Zealanders. Canadians, Imperial Light Horse, &c. all there. General Mahon and General French also there. Fighting every day; had lots of narrow shaves, but never got hit. Captain very good to me, and gives me lots of chances to see good work; had about ten days' fighting (was in battle of Oliefantsfontein); then two days' rest; then early morning start for Pretoria; 35 miles that day. Next morn left Pretoria and had week's fighting out to north-east; got nearly captured there, and had lots of hot work.

Here we joined Ian Hamilton's lot—Pole-Carew also. Lord Roberts and Kitchener marching on Balmoral by Bronkler Spruit, where 94th were cut up in 1881. Had lots of skirmishing, but not the big fight we expected; captured all Boer waggons, but most of men got off.

On the last day's march to Balmoral we had a frightful storm,—rain, thunder, and lightning,—the lightning hopping about on the iron-stone of the ground at places; pitch dark; hollows became marshes in an hour, streams torrents; waggons bogged; niggers shouting and slashing mules and oxen; mules screaming, oxen bellowing; what a night! Every one soaked to the skin. We lost between 300 and 400 mules and oxen that night, and perhaps thirty horses. Horses were falling down, and the men had to walk up to the thighs in water some places. We had to lie down in wet; no tents; and the fire would not burn. Four Argyll and Sutherland Highlanders, one officer, and a nigger died of exposure that night, and a hundred or two in hospital over it, myself amongst them. My dysentery returned, and a sort of ague; also my gums swelled up and formed abscesses at root of broken tooth, and I had to get them all opened and stump taken out. Had to do without food for about a week, bar little condensed milk.

Had three days in ambulance to get here, and have been week here, and am now myself again and wearying to get at them again.

I inquired for Archie Doughty's old man, who is in the Argyll and Sutherland, but he is away with an officer, so did not see him.

Had Lady Roberts up shaking hands with us all here on Thursday, and Lord Roberts himself was up seeing some of the wounded, and as we had one in our room we had a nice chat with him, for he is a little champion, awfully kind. They are still fighting 15 to 20 miles from here. Very few of our chaps were able to go out again, as we have not more than twenty to thirty fit horses left. Some men have had four or five since the beginning, and knocked them all up. My own little cob (*not* the worst in the lot) is still to the front, and looking no worse than when I got him at Kimberley, in spite of over three months' hard work every day.

I forgot to say our Company were mentioned in despatches to Lord Roberts for our work at Rietfontein; had grand chances of seeing big guns in action, both Boer and our own. This is a splendid hospital, endowed by Lady Roberts; used to be a girls' boarding school (no girls here now unfortunately). They feed us awfully well; in fact it is mostly want of good food that is wrong with most of the men, and with that and a rest for a few days they come all right. Of course we have many wounded here also.

I trust you had a successful exam. this past May, and that a big lot passed, even though it will rob me of many pleasant companions.

With a bit of luck I should be home to start College again in January. There is word of Lord Roberts annexing Transvaal 15th, 16th, and 17th this month, and also mobilising Colonials. This may be a step towards sending them home.

Have had no news of any kind about College or the passes. If any of my chums wrote me De Wet must have got the letters. Trust Prof. W. O. Williams has had a good time out in South America, and has enjoyed the work.

It is a grand free life this—no care, and very little meat—four and a half biscuits (just like Spratt's dog biscuit) per day and 1 lb. beef (usually corned); if fresh, it is a bit from some old trek ox, and it is almost impossible to eat it, so tough. That is full rations; but for a week at a time we have been on half rations or three-quarter rations, and one cannot get a chance to buy anything, though you may manage to commandeer a chicken or leg of mutton at some old Boer's. We have had eight issues of rum since we arrived at the Cape (some regiments have had as much in a fortnight). We get coffee in morning, tea at night, never milk and seldom sugar, and both tea and coffee just sufficient to colour the water. Jam, 1 lb. tin between eight men twice weekly, or not so often. Bread we have occasionally got in place of biscuit in town, but it was sour and hardly eatable. That we have lived on since April, and bar that nothing, so that no one can say the Yeomanry have been any better treated than regulars, worse in many cases; but in spite of all we are as keen as ever.

Give my kindest regards to your son and all my professors and late teachers, and accept the same to yourself. Trusting this finds you in the best of health.—I remain, yours very sincerely,

ANDREW SPREULL, Jr.

DISCUSSION ON TELEGONY AT THE NATIONAL VETERINARY ASSOCIATION (AUGUST 24th).

MR. W. PALLIN opened the discussion of a paper by Professor Ewart, of Edinburgh, on "Cross-breeding (Telegony) in Animals," and in doing so said that as no country could compete with Ireland in the production of horses, everything that could enlighten them on the subject of horse-breeding was of the greatest importance. The scientific aspect of the subject had been fully treated in the Professor's paper, and he would, therefore, digress from it and tell them, as a practical horse-breeder, of some of the differences in the lines which made up their racehorses. They were aware that their thoroughbreds originally came from three sources—the Darley Arabian, the Godolphin Arabian, and the Bigerly Turk, represented respectively by Eclipse, Herod, and Malchem. These varied in characteristics, temperament, and powers. The Eclipse line had ten times the number and strength in family of that of Malchem, and twenty times that of Herod, comparatively speaking; and this was no doubt due to a certain extent to prepotency. Perhaps no horse had more of that power than Stockwell, and his descendants on both male and female sides carried it on, whilst the Melbourne tribe, which were the representatives of the Godolphin Arabian, maintained the family peculiarity of long plain heads

and lop ears. The brown colour of the Blacklocks, the chestnut of the Birdcatchers, and the bay of the Touchstones were hereditary characteristics, whilst black spots were transmitted through the family of Thormanby. There was no doubt that the original Irish horse was represented by the Connemara pony, a breed which, he was sorry to say, was gradually disappearing every year; and certainly its extinction had been hastened by the introduction of the hackney and other mongrel breeds, by which a cross-bred animal of an inferior kind had been produced on a larger scale, but devoid of many of the best qualities for which the native pony was famous—its hardiness, conformation, and power to do work on poor pastures and limited diet. A large proportion of the Connemaras were dun in colour, with black markings, and it was remarkable that in horses tracing to that source the last trace of the Connemara pony to disappear was the black striping down the back. He did not quite agree with the opinion of Mr. Francis Gallon, quoted by Professor Ewart, that the two parents contributed one-half, the four grandparents one-fourth, and the eight great-grandparents one-eighth of the characteristics. In-and-in breeding was a question of the greatest importance, and instances like Barcaldine and others crop up where great racehorses were the result. Flying Fox might be quoted amongst others. This led to an important point, namely, reversion. Reversion to ancestral characteristics was an acknowledged fact, and no doubt it was strengthened by in-breeding. In-breeding tended to strengthen a family that were strong in good points, but it might equally increase faults or deficiencies. It should therefore be done with great care, especially in the production of racehorses, as the principal factor in their success was the gift of speed, and when that came hereditarily or by reversion on both sides the risk of failure was reduced. He considered that the best results might be gained from judicious out-crossing. Too often breeders lost sight of robustness whilst in search of conformation likely to produce speed. In order to show how an accidental deformity might follow in offspring we had to produce to the meeting a three-legged cat. The history of the specimen was as follows:—A female cat got caught by one of her hind legs in a rabbit trap. The leg was broken under the hock, and a portion of the bone came away. Some time afterwards she had four kittens—three living and one dead. Each of the live ones had only three legs, the fourth—the same as the mother's injured one—being deficient to the hock. Since then the same cat had had other kittens which were perfect.

The three-legged cat was then exhibited in a cage, and the stump leg could be seen. Mr. Pallin mentioned that she was very cross and unsafe to touch, and had bit him recently.

Mr. M'KENNY said it sometimes happened that some of the greatest racehorses had proved a failure on the stud farm. It was frequently found that horses sold for a mere nothing produced the finest progeny. He thought that in-breeding had a very injurious effect, although it had been corrected under peculiar circumstances. In-breeding as a means of producing great animals, was, he thought, diametrically opposed to the fact.

Mr. VILLIER said that some time ago he witnessed an experiment relating to telegony. Mr. W. S. Gilbert, the well-known writer, was a neighbour and a client of his, and in the course of his travels obtained from Japan two Japanese kittens—a male and a female. They were quite distinct in appearance from the English cat. The female had a litter of

kittens by a tabby cat, and every one of them was marked with the stripes of the tabby cat. Another litter of kittens by the Japanese cat followed, and none of these had any tabby marks.

Professor METTAM spoke of the degenerating influences of in-breeding, and some of the advantages of variation.

Mr. MACGAVIN said that twenty years ago there was in his neighbourhood a peculiarly marked sire horse, and they were able even up to the present time to trace those marks in his progeny.

Mr. WINTER said it would be difficult to convince him that the influence of former sires continued in after breeding. Some of the very best racehorses had been in-bred, but it was nearly always in the first generation. In-breeding was sure, if persisted in, to accentuate weak points rather than strong points.

After further discussion,

Professor EWART returned thanks for the complimentary criticisms which had been passed upon his paper, and in reply to the various criticisms said, in his opinion, prepotency was the question of questions at the present time amongst breeders. So far as in-breeding was concerned, it might not tell for many generations in some breeds of animals, whilst in others the practice might tell at once. One of the first points to be considered was the sort of animals to be dealt with. One part of the world believed that in-breeding was fraught with evil, especially when human beings were concerned, and the other half thought that practically no harm came of it. At least they said that in-breeding produced no harmful results if the stock was healthy. He believed both sides were right, and also that further investigation would show that they had not at present a sufficient number of facts before them to enable them to come to any complete conclusion on the subject. In other words, they had not been careful to observe whether closely related animals were like or unlike; and if they carefully noted in future whether or not consanguineous animals which were mated differed from each other, and in what respects, then they would be better able in the future to come to some decision. Coming to the question of telegony, it was interesting to find an assembly in which this doctrine had so little support. A few years ago almost everybody seemed to believe in it, and he came to that meeting prepared to find many of the speakers favouring the old hypothesis. He was surprised that this was not the case, and he believed that it was by the influence of the veterinary profession, more than any other at work at the present time, that this once almost universal doctrine was being modified. He had certainly heard of no record in regard to the human species where any offspring was born without a limb because the father or mother was so afflicted, and from the results of his experiments he could say that they would not be justified in saying that abnormal changes in nature such as had been shown them were the results of previous injuries to the parents. He would like to refer also to the point Professor Dewar had raised, as to whether animals were bettered by change of surroundings so much that they recovered from any innate weaknesses they possessed. In Scotland, especially by sheep breeders, it was considered that if they sent away some of their stock to another part of the country, and after a time brought them back, it tended to rejuvenate the breeding qualities of the flock. He would suggest that it was the same in the case of the horses that had been sent to America or Australia or New Zealand. But why? Was it simply

because of the change of environs or for quite different reasons? Horses abroad were brought up in an entirely different way from horses at home. Thoroughbreds at home were nursed, and, he might say, were brought up in greenhouses, while abroad they led a more natural life, with the possible result that their weaknesses were weeded out or eliminated. In other words there had been a certain amount of natural selection, with the result that there was more vigorous stock found there than at home Therefore, he had no doubt in saying the surroundings had an influence. In conclusion, he again returned thanks for the manner in which his paper had been received.

HONOUR FOR PROFESSOR EWART.

The PRESIDENT said at their previous day's meeting, when Professor Ewart was not present, it was proposed that the honour of honorary member of the Association should be offered him for acceptance. It was usual —and they had not departed from that course heretobefore—that all members of their Association should be honorary members of the Royal College of Veterinary Surgeons. But they fortunately had a rule which admitted of gentlemen who had rendered services to the veterinary profession or to the Association being elected as honorary members. Yesterday for the first time they had elected Professor Ewart to such a position, and they hoped he would accept it as a recognition of the very valuable services he had rendered them. (Applause).

Professor EWART said he accepted the honour with very great pleasure. He was surprised to find that he was the first to be honoured in this way, and it made him feel all the more proud. He could promise if they came to Edinburgh next year as proposed he would have much pleasure in taking as many as cared to come, and showing them his work at Penicuik.—(Applause).

THANKS FOR LOCAL HOSPITALITY.

On the motion of Mr. ABSON, seconded by Mr. M'KENNA, a hearty vote of thanks was passed to those veterinary surgeons practising in Dublin who had invited the members of the Association to the performance at the Theatre Royal on the previous night.

Mr. M'Kenny returned thanks.

THE ILLNESS OF MR. FREEMAN, M.R.C.V.S.

On the suggestion of Mr. Abson, supported by the President and Mr. M'Kenny, it was decided to send a letter to Mr. Freeman, M.R.C.V.S., sympathising with him in present illness, expressing regret at his absence abroad, and hoping that he would be able to attend their next year's meeting in perfectly restored health.

VETERINARY SURGICAL AND MECHANICAL APPARATUS.

Mr. SYDNEY VILLAR inaugurated a discussion on a paper on the above subject which had been prepared for the annual meeting by Mr. M'Kenny, Dublin. He pointed out the various improvements which had been made in modern instruments by different English and foreign makers, and explained the use and application of those which are least known amongst ordinary practitioners. He also took the opportunity of objecting to

several imperfections which he had observed in the manufacture of some of these.

Mr. Winter and other speakers having criticised the paper, Mr. M'Kenny replied.

VOTE OF THANKS.

Mr. Bloyde then proposed a vote of thanks to the President for his dignified conduct in the chair. The success of their first meeting in Ireland was very largely due to the admirable conduct of Mr. Hedley and the manner in which he had regulated their proceedings.

Mr. Sampson seconded the motion, which was carried by acclamation.

The President, in reply, expressed his thanks, and spoke of the pleasure he felt in observing how successful they had been in their deliberations. Much of the credit of organisation was due to the Local Secretary and Executive, who worked very hard, indeed, to promote the success of their annual gathering.

A vote of thanks was also passed to the writers of the various papers, on the motion of Mr. Gough, seconded by Mr. Bell, and responded to by Mr. Byrne, Roscommon, and Mr. Hoare, Mr. Howard, and Mr. M'Kenny.

Similar votes were passed to the Speakers who had opened the discussions on the different papers, to the Local Committee and the various officials, and to the President and Council of the Royal Dublin Society, for their kindness in allowing the use of their theatre for the meetings of the Association.

The proceedings concluded.

THE DINNER.

The members of the Association dined together in the evening at the Gresham Hotel. There was a large attendance of members and guests. The chair was occupied by the President of the Association, Mr. M. Hedley. On the right of the Chairman; sat the Right Hon. Horace Plunkett, M.P.; Professor Ewart (Edinburgh); Sir John W. Moore, President of the College of Physicians of Ireland; Sir Chas. Cameron, C.B.; Mr. R. Cantrel. To the left sat Sir Christopher Nixon; Mr. Thomas Myles, President of the Royal College of Surgeons of Ireland; Mr. Wm. Field, M.P.; Mr. Macartney; Mr. R. J. Moss, Registrar Royal Dublin Society; Colonel Steel, and Professor Carroll.

During the evening excellent musical selections were contributed by Messrs. Cowle, Butler Erskine, and Hurley.

The usual loyal toasts having been given—

The CHAIRMAN, in giving the health of the Royal Dublin Society (applause), said that those of them who had never visited Ballsbridge would experience a revelation next week, for there was no other part of the United Kingdom that had premises in any way equal to those of the Society there. They would see horses and horses and horses, until they were tired of them; and as to the quality of horses at the Society's shows, it seemed to be better and better every year. They had expected Lord Ardilaun to be present there, and to reply to the toast, but circumstances had prevented him from attending; and therefore he (Chairman) coupled with the toast the name of Mr. R. J. Moss.

Mr. Moss briefly responded.

Mr. HUNTING, in proposing the "Agricultural Interests of Ireland," said

these were chiefly concerned with live stock. In Ireland the greatest interest was agriculture. One naturally turned to the newly appointed Department of Agriculture, by which they hoped to make Ireland the model agricultural country of the world in a short time. In Ireland he believed the time was not far distant when the horse would take a place that it had never occupied before under the new Department (applause). He coupled with the toast the names of Mr. Horace Plunkett, M.P., who in every matter appertaining to agriculture was a good deal in advance of his time, and who, he hoped, would not meet with any disappointment or obstruction in trying to get progress made; and of Mr. Field, M.P., whose exposure of the system under which retired schoolmasters and bricklayers were made sanitary inspectors, had proved to be so useful.

Mr. HORACE PLUNKETT, M.P., in responding, said he had in the first instance to add to the many welcomes which the Veterinary Association had received that of the Department of Agriculture and Technical Instruction. The members of the veterinary profession were quite the most important that the Irish agriculturist had to consult. The Association had come to Ireland at a very auspicious moment (applause). Those present who were Irish would agree with him that there was an industrial awakening that had never been witnessed before. Public opinion had interested itself in questions of practical importance in a way that it had never done before, and the result was that the Legislature had been compelled—though he did not think there was much compulsion, for the Government was friendly—to follow the example of almost every country in Europe with which they competed, and to hand over the agricultural, industrial, and commercial concerns of this country to the special care of a new Department. With that Department he had the honour to be connected. The Royal Veterinary College would never have seen the light but for the active interest that was taken in it by the Royal Dublin Society. He found himself on the 1st of April with a sum of £15,000 burning in his pocket, which was to be handed over to the College which Mr. Moss and his counsel, Sir Christopher Nixon, and others had initiated. He had to hand it over on certain conditions, and he had to consult all who were interested in the project. First and foremost amongst them was the veterinary profession, and he came into touch with them in a way that he had never done before. He found that they were very much exercised as to what their future status was to be, and after several interviews he found himself very largely in sympathy with them.—(Applause). He thought that perhaps they harboured some misunderstandings, which had since been dispelled. An idea prevailed that the veterinary profession was being to some extent exploited for the benefit of the medical profession. Nothing of the kind was intended, and nothing of the kind would take place.—(Hear, hear). The veterinary profession was not as old as Æsculapius, but, having regard to the youth of their profession, they had a very good record. In the matter of the elimination of disease, he was not sure that they could not challenge the medical profession. They had successfully stamped out in Ireland the foot-and-mouth disease and pleuro-pneumonia. Mr. Hunting had hinted that they had not stamped out rabies, but he (Mr. Plunkett) believed that there were only 11 cases of rabies in Ireland last year, as against 50 the year before. Swine fever and anthrax were also nearly stamped out. He wished to give every credit to the medical profession for their great success in the elimination of disease, but for every

disease that they had stamped out they invented two new ones.—(Laughter). Veterinarians and medical men were agreed that the most important study of the day was bacteriology, and that was a subject that could only be pursued successfully by the joint action of the two bodies.—(Applause). If the Royal Veterinary College did no more than provide the medical profession with fresh facilities for studying bacteriology its existence would be amply justified.—(Applause). An objection had been taken to what was believed to be the proposal of the Veterinary College, that animals should be treated at a nominal fee. The Royal Dublin Society and the Board of Governors, including the representatives of the Royal Dublin Society, had been in consultation with the Department on this subject. Professor Mettam, the distinguished Principal of the New College, had given them his advice on this matter, and he (Mr. Plunkett) believed that the final arrangement which had been arrived at would minimise any inconvenience to the Irish profession which might arise from the establishment of the College. Professor Mettam thoroughly sympathised with the veterinary practitioners of Dublin, and he (Mr. Mettam) told him that he did not see the least difficulty in harmonising the arrangements for the educational requirements of the College with the legitimate interests of the profession in Dublin.—(Hear, hear). The veterinary profession asked for direct representation on the governing body of the College. It was not thought necessary to give them direct representation, but it was intended to give them a fair representation, and he was quite sure that the Royal Dublin Society would favourably consider a like proposal. He wished to give it as his opinion that the future of the veterinary profession was higher to-day than it ever was before. They were going to take greater interest in preventive measures, and they could not do that without the constant advice of the profession. There would be great developments in connection with the Agricultural Department, and he hoped the veterinary profession would be foremost in the work.—(Applause).

Mr. WILLIAM FIELD, M.P., also responded. As President of the Irish Cattle Traders' Association, he wished to say his body had done something towards obtaining a Veterinary College for Ireland, because they had done much in educating public opinion as to its importance.—(Hear, hear).

The toast was heartily honoured.

Sir CHRISTOPHER NIXON proposed the toast of the Royal College of Veterinary Surgeons. He wished to acknowledge that in the starting of the Irish Veterinary College they had received great assistance from the Royal College of Surgeons, and they owed much to that College for the manner in which it had raised the status of its members.

Dr. CARTER DEWAR having spoken, the sentiment was heartily drunk.

Professor METTAM proposed the toast of the Medical Profession.

Sir JOHN WILLIAM MOORE, President of the College of Physicians, in replying, bore testimony to the valuable services his profession derived from the work of veterinary surgeons.

Surgeon THOMAS MYLES, President of the College of Surgeons, expressed great hopes that the new College would be the means of doing great work.

Sir CHARLES CAMERON proposed the toast of the National Veterinary Association, which was briefly responded to by the Chairman, and cordially drunk.

Colonel STEELE proposed the toast of "Our Guests," which was responded to by Professor EWART and Professor CARROLL, and the toast of the "Press" concluded the proceedings.

REMARKS ON THE DIAGNOSIS AND TREATMENT OF THE GASTRIC AND INTESTINAL AFFECTIONS OF THE HORSE.[1]

BY E. WALLIS HOARE, ESQ., F.R.C.V.S.

MR. CHAIRMAN AND GENTLEMEN,—In the present scientific age the race after micro-organisms bids fair to eclipse the study of clinical medicine, and commonplace diseases do not receive the amount of investigation which they merit. It cannot be said that our knowledge of such affections has yet reached the acme of perfection, because we are almost daily convinced of the amount of information we lack with reference to the diagnosis of even ordinary diseases. And, as rational treatment depends on having our diagnosis as correct as possible, it follows that we should devote our energies to the interpretation and appreciation of symptoms, and to the careful observation of the clinical phenomena of diseases.

Gastric and intestinal diseases form a large proportion of the cases that come under the notice of the town practitioner. From a clinical point of view they possess features of marked interest, and offer a wide field for investigation with reference to their prevention, diagnosis, and treatment.

We cannot say that, so far as diagnosis is concerned, we have advanced to any great extent in recent times, and we must admit, if we are honest, that symptoms are often deceptive, erroneous diagnosis of frequent occurrence, and, as a result, treatment not all that could be desired. Indeed, after a consideration of a series of cases of abdominal affections, in which post-mortem examinations have shattered our faith in what we believed to be diagnostic symptoms, we are inclined to say with Hippocrates, "Experience is fallacious and judgment difficult."

Have we any means at our disposal to improve on knowledge in these respects, and can we ever hope to be able to diagnose these affections in a tolerably accurate manner? Both of these queries can be answered in a positive manner, but the second obviously depends on a special study of the first.

Two things are essential to improve our knowledge of diagnosis in the diseases under notice. In the first place, individual investigation must be carried out; the symptoms observed must be compared with the lesions found at the autopsy, any special symptom being noted and its cause sought for. We cannot draw safe conclusions from single cases, nor term certain symptoms diagnostic which may have been pure coincidences. A series of cases of the same affection must be collected, their clinical history studied, and careful post-mortem examinations made in every instance that dies. If on analysing these cases we find a certain symptom or set of symptoms present, and a lesion to account for the presence of such, of course excluding those which are common to many affections, we shall be on the right road to effect our purpose.

In such an investigation we need not accept recognised dogmas, nor implicitly believe in the clinical pictures of standard text-books, or in the stereotyped symptoms so faithfully handed down from one generation of practitioners to another. Believing that "a wise prejudice and a judicious scepticism are the foundations of our knowledge," we should observe and think for ourselves.

[1] Read at the Meeting of the Veterinary Medical Association of Ireland on August 28 1900.

The next important attribute after individual investigation is discussion and criticism, and a comparison of experiences under a variety of circumstances. Clinical observation to be of real value must be thorough and accurate, and conclusions derived therefrom must stand the test of criticism, and the judgment of minds matured by years of experience. It has been said that no practical benefits can result from the study of gastric and intestinal affections in the horse, in consequence of the symptoms either being misleading or common to many different forms of disease, while the treatment varies little, or, in other words, very little can be done in some instances beyond adopting measures for the relief of pain. Such, although true to a certain extent, should not deter us from a diligent study of the subject, for we should not remain satisfied with our present position as regards diagnosis and treatment. No doubt there are many who fall into the rut of every-day experience, and find it easier to divide abdominal affections in an arbitrary manner, rather than to trouble their minds by endeavouring to improve their knowledge. Thus, when a case showing abdominal pain yields to treatment and recovers, it is designated Colic. If serious symptoms occur with acute pain, and anodynes fail to give relief, then the case is said to be Enteritis. Again, if very violent symptoms of pain are observed, with peculiar attitudes and postures of the patient, a diagnosis of "twist" of the intestine is given. Admitting that the above may satisfy some individuals, it by no means follows that we should rest content, as by constant observation and diligent research we are sure to discover some methods of diagnosis that have previously remained unnoticed.

In order to be as brief as possible, as the subject is an extensive one, I intend to divide it into different sections, and with a view to facilitate discussion, I shall place some of the important points in the form of queries, the answers to which I hope you will render complete, as they will prove of great practical value as aids to diagnosis and treatment.

(*A.*) Is it possible to distinguish between acute affections of the stomach and those of the intestines, and can we make a differential diagnosis of the various gastric diseases?

If we attend the case early and are enabled to obtain its true history, it is possible we may differentiate between gastric and intestinal affections.

I say only that it is possible, because in very many cases post-mortem examinations have demonstrated how very erroneous diagnosis has been in this respect. No doubt in some gastric affections, when cerebral complications are present, we can arrive at a correct diagnosis, while in others the symptoms presented point to intestinal just as much as to gastric lesions. Again, we have to remember that the administration of large doses of opiates masks the symptoms, and we are inclined to mistake the physiological actions of narcotics for the symptoms of the disease.

The symptoms usually given as indicative of gastric affections are not always reliable, such as constant pawing, sweating over the side of the neck and shoulder, muscular tremors of the same region, persistent pain, &c. Let us refer to the various gastric affections in order to ascertain if we can collect any diagnostic symptoms. Of these affections the most important are:—(1) Acute gastritis; (2) acute impaction of the stomach, with or without gastritis; (3) acute gastric tympany; (4) rupture of the stomach; (5) chronic gastric catarrh.

Acute gastritis is stated to be a rare affection in the horse except as the

result of irritant poisons. Although not so frequently met with as other affections, still experience teaches us that it occurs more often than is supposed, and the result of post-mortem examination gives us positive evidence on this point. We must admit, however, that it is very seldom we meet with cases of uncomplicated gastritis, except as the result of irritants, for in all the instances that have come under my notice there was evidence of cerebral lesions as a complication of the gastric affection. Of course it is quite possible that cases of gastritis may occur and recover, and the affection may not have been recognised.

Those cases which have come under my notice have presented the following symptoms. Pain of a dull, persistent character, evidenced by uneasiness and pawing, gradually becoming more acute, with alterations in the character of the pulse and a slight rise in temperature, total loss of appetite, tremors of the muscles of the shoulder and fore-arm, and irregular patches of perspiration. In some instances cerebral complications occur early, and the patient moves about the stall in a listless way, finally going down, and struggling in a convulsive manner, with symptoms of meningitis. I have encountered a large number of these cases, and in every instance have found evidence of acute gastritis at the post-mortem examinations, and the meninges of the brain opaque and deeply injected.

In *acute impaction* of the stomach cerebral complications are usually predominant, but they are manifested by less violent symptoms, a comatose condition of the animal being more often met with; still I have seen cases of this nature that terminated in convulsions. Post-mortem examinations have revealed a very distended condition of the stomach with solid ingesta, in fact in some instances it was a matter of surprise that rupture of the organ had not occurred. The gastric mucous membrane in some of these cases is acutely inflamed, in others a condition of subacute gastric catarrh is present.

Acute gastric tympany is not recognised by some authors, but of its existence as a distinct disease we have ample evidence, both clinical and post-mortem. We must admit that it is very difficult to diagnose, as symptoms are by no means constant. As a rule the symptoms are very violent in character, pain is very acute and persistent, the pulse becomes weak and almost imperceptible, and respirations greatly accelerated. Fluid medicines are administered with great difficulty, and a portion of the drench is often returned through the nostrils. In one case that came under my notice the striking symptom was the animal constantly sitting on his haunches and maintaining this position for some time. Usually drugs administered have little or no effect, and cerebral complications ensue towards the end. The degree of tympanitis present is not excessive, and there is no hardness or tenderness of the abdominal walls. In some of the less severe cases that have come under my notice there were frequent eructations of gas from the nostrils, accompanied by distinct hiccoughs, which appeared to give marked relief to the animal; these cases recovered. The post-mortem appearances are enormous distention of the stomach with gas, the organ extending far beyond its normal limits; it usually contains a quantity of fermenting ingesta.

Rupture of the stomach.—Occasionally this lesion may present obscure symptoms and its presence may be overlooked, but the general condition of the patient, the expression of the countenance, the sudden cessation of acute pain, the rapid occurrence of tympanitis, the hardness and coldness

of the abdominal walls, and the cold sweats are sufficiently suggestive to the experienced observer, and are so well known that they do not need description here. Vomiting may or may not occur, and in some cases the horse may sit on his haunches, but this is by no means a constant symptom. The occurrence of vomition must not always be regarded as a diagnostic symptom of ruptured stomach, as we see it occasionally during the course of other affections.

(*B.*) Does vomiting occur previous to the occurrence of the rupture or subsequent to it? This is a point worthy of discussion, as there is much difference of opinion concerning it. My own opinion is that the rupture is the result of the efforts of vomition, and we have sufficient evidence to show that the act of vomition can occur in the absence of rupture of this organ. Cases of rupture of the œsophagus have occurred in human beings as the result of violent attempts at vomition, and we may safely assume that similar results may occur in the stomach of the horse. Of course, in our present state of knowledge the question is simply one of opinion, still we may be able to arrive at a conclusion by studying the matter and comparing experiences and views.

Chronic gastric catarrh gives rise to the usual symptoms of indigestion, but in addition it tends to render the animal liable to recurring attacks of colic. It is quite probable that many of those mild attacks of colic which frequently terminate favourably without any treatment are due to gastric derangements. The number of cases in which we find alterations in the gastric mucous membrane at post-mortem examinations would lead us to believe that affections of this organ are more common than is usually believed.

Turning our attention to intestinal affections, we find a similar difficulty in arriving at a correct diagnosis. Colic is a very convenient term for all varieties of abdominal pain. We believe spasmodic colic to depend on a spasmodic contraction of the muscular coat of the intestine, and many causes are assigned to account for this condition. The sudden onset, the intermittent attacks of pain, the absence of constitutional symptoms, and the rapidity with which the affection yields to treatment, are points which are regarded as important in distinguishing simple colic from enteritis. But it is often difficult, if not impossible, to give a definite opinion at the commencement of an attack as to the result. Some cases show the most violent symptoms of pain at the start, and recover, others not giving evidences of a serious character terminate fatally.

Can simple spasmodic colic, if unrelieved, cause death? The answer to this must be in the negative. We read in Percival of the post-mortem appearances of fatal cases, but we are inclined to believe that enteritis was the cause of death.

Does enteritis occur as a sequel to unrelieved colic, or is it a separate and distinct affection from the commencement? On this point difference of opinion exists, some authorities maintaining that unrelieved colic will terminate in enteritis, others that enteritis is a distinct affection. The fact is that we have a great deal to learn with reference to enteritis in its early stages, as we generally see the cases when the disease is fully established. As yet we cannot decide what is the real cause of enteritis; no doubt many cases are suggested, but as we encounter many fatal cases, not depending on recognised causes, we must confess our ignorance on the subject. We are perfectly well aware of the fact that cases of abdominal pain may con-

tinue with acute symptoms for a long period and recover. What was exactly wrong with such cases we cannot decide, but we conclude that enteritis was not present. This leads us to the query—

Do cases of acute enteritis ever recover? Judging by the lesions we meet with at post-mortem examinations we should say that recovery in cases of acute enteritis was impossible. We hear of cases that have recovered, but we are sceptical as regards the accuracy of the diagnosis. Experience teaches us that if cases of this affection last for a few days symptoms of septic pneumonia ensue, and I have met with several cases of this nature in which the autopsy revealed a condition of general septicæmia, while the lesions of enteritis were plainly visible in the intestine. We shall not be far wrong in assuming that the general septicæmia arises from absorption of the intestinal contents.

Are there any symptoms that will enable us to differentiate between enteritis, volvulus, intussusception, mesenteric hernia, intestinal calculi, &c.? So far as my experience goes, I do not believe that we can give a positive diagnosis in cases of this cature. No doubt the gravity of the symptoms will lead us to give an opinion that the case is likely to have a fatal termination. But we cannot rely on the attitudes and postures assumed by the patient, as they are by no means constant in their significance. The result of post-mortem examinations prove only too often how erroneous our diagnosis has been.

Impaction of the colon is a condition which we may possibly diagnose as follows. The slow and persistent character of the pain, the tendency of the animal to force the hind quarters against any solid object, and, by rectal examination, the discovery of the distended portion of the intestine containing the ingesta hard and impacted. Many of these cases, however, are complicated with enteritis, and it is impossible to distinguish them from that affection.

What is the commonest cause of death from intestinal affections in the horse? My experience is that acute enteritis claims by far the greatest number of victims. We often hear of cases being diagnosed as twists, &c., but in the absence of post-mortem examinations we do not accept the diagnosis. I do not think it necessary to refer at length to the various attitudes and postures assumed by horses in the various abdominal affections, as they are perfectly well known to practitioners, and the majority of us will agree that their value as diagnostic symptoms is very little. One symptom, however, I have frequently observed in gastric affections, *i.e.* the horse lies on the sternum with the fore legs stretched out, and appears to get ease in this position. Lying on the back with the limbs resting against the walls, and remaining thus for any period, is generally indicative of volvulus or intussusception, or mesenteric hernia, but this must not be too implicitly relied on.

Walking round the box in a circular manner I do not regard as a symptom of any intestinal disease, but it is the physiological effect of large doses of opium or morphia. It can be produced in a healthy horse, and Major F. Smith, A.V.D., was the first to draw attention to the fact that the "circus mode of progression," as it has been termed, was the effect of the opiates administered.

Displacements of the colon are mentioned by some practitioners as being of more frequency than is imagined. Indeed we read of cases in which the affection has been diagnosed, and the matter set right by manual dexterity.

Having only on one occasion met with a case of this description, I cannot venture to offer an opinion further than to remark that the post-mortem examination revealed an extensive displacement of the pelvic flexure of the colon, with enteritis accompanying it. Needless to say I did not diagnose the lesion, and had I done so I could not have relieved the patient.

I have met with one case of diaphragmatic hernia, but am unable to bring forward any symptoms which would lead one to diagnose the lesion.

With reference to the therapeutics of the subject, time will not permit of a detailed consideration. If we are enabled to diagnose the affection we can then adopt rational treatment. In cases of impaction of the stomach the indications for treatment are to remove the gastric contents by the administration of purgatives, and to allay acute pain. Some authorities recommend aloes, but I prefer calomel with a full dose of raw linseed oil and two ounces of pure terebene. Judging by the post-mortem appearances of this affection, we are forced to believe that in severe cases any drug will fail to act on the contents as the walls of the stomach are distended and paralysed. If pain is a prominent symptom, I prefer belladonna to opium as an anodyne.

In cases of acute gastric tympany, that is, if we should chance to be able to diagnose it, large doses of terebene combined with ammonia should be given in full doses of raw linseed oil.

The treatment of simple spasmodic colic is usually a simple matter, but a great difference of opinion exists as to whether an active cathartic such as aloes should be given. Those who favour the administration of an aloetic purgative base their practice on the view that colic depends on the presence of irritating ingesta in the intestinal canal, and the rational treatment is to administer a purgative to remove the cause. Two objections can be raised against this treatment. In the first place it is often difficult, if not impossible, to ascertain the *cause* of abdominal pain, and if the case happen to be anything else except simple colic, this treatment is simply adding fuel to the fire, and does more harm than good. In the next place, aloes takes some time to act even in a horse that is prepared for physic. Again, the administration of aloes prevents the horse working for some days, and the large majority of our simple colic cases go to work the following day. Hence I regard the rational treatment to be the relief of pain by the administration of an anodyne and anti-spasmodic. Every practitioner has his favourite formula for this purpose, and it really matters very little which agents we rely on. The important point is not to give too large doses of opiates, these interfere with the peristaltic action of the intestines, and by masking the symptoms of the disease may lead to erroneous opinions being given.

My experience teaches me that if the usual doses of opium or morphia fail to give relief from pain there is no use in repeating them, as, instead of a narcotic effect, a stimulating action of the cerebrum is produced, evidenced by the patient walking around the stall in a circle. The drug that I have found most useful is canabis Indica (Indian hemp); this produces the desired effect, viz., a freedom from pain, and as I have now a lengthened experience of its value, I can speak definitely of its superiority over opium or morphia. We do not like leaving a case, especially at night, unless the animal appears relieved from pain; this effect opiates certainly do not accomplish in protracted cases. Again, in cases which we know from the symptoms are hopeless, it is our duty to smooth the path to

death, and for this purpose I know of no drug to equal canabis Indica. If the case is one which is capable of recovery, this drug will not in any way retard the progress. It is best administered in fluid form, and the usual dose is one ounce for a full-sized horse. In some instances marked narcotic effects are produced, but these need not occasion any alarm.

In cases of intestinal obstruction without acute pain, great discrimination is required in treatment. If we are satisfied that the case is one of impaction of the colon, with no enteritis present, but a paralysed condition of the intestinal walls, then the hypodermic injection of eserene gives excellent results. But we cannot always be positive of the state of affairs, and the administration of eserine too often hastens death, with increased agonies.

I much prefer the administration of enemas by means of the long gum elastic tube. This, although difficult in many cases to manipulate, is perfectly safe, and has the great advantage of being absolutely harmless. In a large number of cases I have seen the greatest benefit from its employment; a little patience and tact enabling us to obtain a passage of the impacted ingesta with safety.

With reference to laparotomy, it might be expected that I should say a few words. No doubt abdominal operations look very well described on paper, but there are enormous difficulties to be overcome in actual practice. In the first place, the intestines of the horse, by reason of their voluminous size and natural position, offer grave obstacles to the operation. In the next place, anything approaching an accurate diagnosis is impossible, and it would be simply absurd to endeavour to do any good by operating in a case of acute enteritis. Again, we would scarcely be justified in making an explanatory operation until other means had failed, and in such an instance the recuperative powers of the patient would be considerably diminished. Finally, the impossibility of obtaining suitable aseptic surroundings in many instances must be considered.

In conclusion, I must thank you for your patience in listening to so lengthy and ill-constructed a paper. I am fully conscious of many errors and omissions, and thoroughly convinced that I have brought nothing forward that is not already well known. But if my efforts are rewarded by an interesting and useful discussion I shall be amply satisfied, believing that "free and fair discussion will ever be found the firmest friend to truth." If the paper does not come up to your expectations, do not hesitate to express your criticisms thereon, as the "teachings of failure" are of far greater value to one who has the temerity to bring forward an essay than the gilded dreams of imaginary successes.

EXTRACT FROM REPORT TO GENERAL TRUMAN, INSPECTOR-GENERAL OF REMOUNTS, ON VETERINARY AND OTHER WORK DONE AT NEW ORLEANS, U.S.A., FOR THE IMPERIAL REMOUNT COMMISSION IN 1900.

BY W. OWEN WILLIAMS, F.R.C.V.S., F.R.S.E., VETERINARY SURGEON.

On arriving in New Orleans at the end of January 1900, I found that, owing to reported outbreak of glanders amongst the mules in transit on ship to South Africa in the month of December 1899, all mules about to be shipped were being subjected to the mallein test.

Owing to lack of a British Veterinary Staff in New Orleans, Captain the Hon. Reginald Marsham, Chief of the Remount Commission in America, had placed the testing of the mules in the hands of a firm of American qualified Veterinary Surgeons who were practising in New Orleans.

On observation I found that these veterinary surgeons did not adopt most of the precautions which European veterinarians consider absolutely necessary, and came to the conclusion that the American methods were of little or no value in determining whether or not the mules were glandered. At the same time it was obvious that, if all the conditions as required by European veterinarians were carried out, not only would the expense be enormously increased, but the export of mules would have been most seriously interfered with, if not temporarily suspended.

I suggested to the gentlemen who were carrying on the testing a number of precautions to adopt, which would assist greatly in determining whether or not the mules were sound. These precautions were at once adopted. But even then the results were not satisfactory. I then had a number of mules picked at random from a bunch, and adopted every precaution whilst they were being subjected to the test, and in several of these mules I found that there was reaction but not glanders.

To make certain, I killed a number of mules which had typically reacted to mallein, but on post-mortem, made on each occasion in the presence of both British and American veterinary surgeons, there was no trace of disease of any kind to be found: and still further, guinea-pigs which were inoculated with juices and blood from the reacting mules remained healthy.

As a result of these investigations (among about 4000 mules), I came to the conclusion that the mallein test in the mule, even under the most careful precautions, was unreliable and unsatisfactory, and at my request Captain the Hon. Reginald Marsham cabled to you, sir, stating that, in my opinion, testing mules with mallein might be done away with and other precautions adopted, and a reply was received that I had to use my own discretion.

Knowing that glanders and farcy are both acute diseases in the mule, and that symptoms of them are exhibited within ten days of acquisition of the disease, I suggested to Captain the Hon. Reginald Marsham that all mules for shipment should come to New Orleans at least ten days before shipment, so that they could be examined daily for any indication of any disease, and precautionary steps taken when necessary.

To this Captain the Hon. Reginald Marsham readily agreed, and we proceeded to make the necessary arrangements for the carrying out of the suggestion. From that time onwards all mules were carefully examined daily in New Orleans and also immediately prior to shipment, the greatest care being taken to prevent any animal with signs of any disease being put on board ship, and as far as I am aware no cases of glanders or farcy were shipped from New Orleans, nor was there any outbreak of these diseases during the voyage to Africa.

In the carrying out of this work I have to thank Messrs. Hunt, Jowett, and Wall, all Members of the Royal College of Veterinary Surgeons, and Mr. M'Clure, D.V.S., for their very great assistance.

A CASE OF PNEUMONOMYCOSIS DUE TO THE ASPERGILLUS FUMIGATUS.[1]

BY LEONARD PEARSON, B.S., V.M.D.,
Professor of Theory and Practice of Veterinary Medicine and Dean of the Faculty of Veterinary Medicine, University of Pennsylvania; State Veterinarian of Pennsylvania; and

MAZYCK P. RAVENEL, M.D.,
Bacteriologist of the State Live Stock Sanitary Board of Pennsylvania; Lecturer and Demonstrator of Bacteriology, Veterinary Department, University of Pennsylvania.

[From the Laboratory of the State Live Stock Sanitary Board of Pennsylvania.]

General Considerations.—Pulmonary aspergillosis is an uncommon disease, and practically all of the exact knowledge we have of it is of recent date. While infection by other mould fungi has been reported, it is difficult to explain just why the aspergillus fumigatis should be the offending organism in almost all cases. The high temperature at which it thrives, and the wide extent of its distribution in nature, no doubt have something to do with it, but cannot account entirely for the fact.

The mode of infection is through the respiratory tract. Only a small number of the spores inspired are able to reach the alveoli; the great majority being arrested on the way, and thrown out in the tracheal and bronchial secretions. Having reached the alveoli, Hildebrandt has shown that they penetrate the epithelial lining without difficulty, and are taken up by the "staubzellen." Both animals and man appear to possess a great degree of immunity to intestinal infection. Grawitz has never observed it; Lucet has seen it only once, and Rénon has produced it only a few times experimentally.

The aspergillus forms no toxin, either intra- or extra-cellular, and its pathogenic power is due entirely to a traumatism exercised by the masses of mycelium which leads to a necrosis of the cells, and a leukocytic reaction which diminishes the functions of the organs, the final result being an enfeebled condition of the animal and a lessened resistance to hurtful influences. When fruit hyphæ can form, the myriads of spores given off by them may be carried to other parts of the organ, and in this way the foci rapidly multiply, and as in the case under consideration, practically the entire organ becomes invaded. The opinion held by some authors that in the mould mycoses there is "no fructification or actual multiplication" of the infecting agent, and that the "number of the disease foci corresponds exactly with the number of spores introduced," is erroneous as to the spontaneous disease as well as the experimental form. In the latter, fruit formation is exceptional, but has been observed by Rénon, and, as in the spontaneous disease, takes place only where there is full communication with the air. It has been observed only in the lung. It is extremely rare for aspergillosis to pass from one animal to another, and infection can take place only by spores, and not by mycelium.

In experimental aspergillosis, especially when produced by the injection of a small number of spores, and somewhat slow in its evolution, the nodules bear a very close resemblance to those of tuberculosis, as they are seen in the kidneys, lungs, liver, bone, &c. Rénon considers the affection a pseudo-tuberculosis, which he would designate as "aspergillar tuber-

[1] Read before the Philadelphia Pathological Society, May 24, 1900.

culosis," while the nodules are "aspergillar tubercles." Certainly the clinical features of the affection in many cases justify the name. Clinically, in man as well as in animals, the disease presents two distinct types, while there are intermediate forms which partake of the character of both. In one form, the symptoms are almost exactly those of tuberculosis; in the second, emphysema and bronchitis are marked.

In cases where the course of the affection is chronic, the fungus may or may not be found in the tissues. When it has disappeared, a chronic interstitial pneumonia may remain which eventually causes death. In lung tissue still containing fungus, we find dilated bronchioles, often deprived of their epithelium, leading into pneumonic areas, in which are nodules or pseudo-tubercles made up of mycelium, sometimes so arranged as to closely resemble actinomycosis. There is much phagocytic reaction in these pneumonic areas, indicating an active resistance to the invasion. In cases where the symptoms have been those of emphysema and dyspnœa, patches of consolidation breaking down into cavities are found, with well-marked compensatory emphysema.

Microscopically the walls of the small bronchi are thickened, and both the alveolar walls and cavities contain mycelium. In some areas the tissues are so disorganised as to be unrecognisable, and there is breaking down with the formation of microscopic cavities. The mycelium is in intimate relation with the lung tissue, and since it is accompanied with much phagocytic reaction, the invasion seems to be the cause of the lesion.

In old cases in animals we sometimes find foci which have become caseous or even calcareous, usually about the size of a pea, containing both pus and mycelium. Almost always the nodules alternate with areas of pneumonic consolidation and emphysema. An interesting feature is the absence of fœtor in cases of gangrene of the lung associated with the aspergillus, the fungus probably inhibiting the growth of putrefactive bacteria. The formation of the "odourless gangrenous cavities of Virchow" is ascribed by Saxer to the action of the aspergillus.

Pneumonomycosis aspergillina is a rare disease among domestic animals, and has not heretofore been described in the United States in a mammal. Cadéac in his *Pathologie Interne des Animaux Domestiques* (Paris, 1897) cites five reports on this disease among horses and seven among cattle. Schneidemühl in his *Lehrbuch der Vergleichenden Pathologie und Therapie* (Leipzig, 1898) states that mycotic pneumonia is not rare among animals, and that it is especially common among birds. However, cases are not cited to support the statement in regard to the frequency of this condition. He states that mycotic pneumonia is more common among horses and cattle than among sheep and dogs, and that fungi are frequently accidental in the lungs.

Friedberger and Fröhner, *Lehrbuch der Speciellen Pathologie und Therapie der Haustheire* (Stuttgart, 1896), quote a report from Pech dating from the year 1875, in which it is recorded that seven horses kept in one stable, and fed on mouldy, musty, cut straw, developed mycotic pneumonia at the same time.

Ostertag in his *Handbuch der Fleischbeschau* (Stuttgart, 1899) calls attention to the resemblance between some cases of aspergillar mycosis of the lungs and tuberculosis, and, in some few instances, there is said to be a certain resemblance to the macroscopic lesions of lung plague. The small hepatized areas in pneumonomycosis do, indeed, bear some resem-

blance to the lesions produced by a recent invasion of tubercle bacilli into a restricted area, but are not enough, like the sharply circumscribed tubercles that one usually sees, to occasion an error in diagnosis.

The resemblance to lung plague in the present case was even more superficial. As will be seen by reference to the notes on the necropsy, the interlobular connective tissue was emphysematous, thus causing what was seen on the surface of the lungs as yellowish bands separating the somewhat hyperæmic lobules of the lungs. This caused a distinct "marbled" appearance, but the marbled appearance was not due to the lesions produced by the fungus,—it was due entirely to the emphysema in the interlobular connective tissue and the hyperæmia of the lobules. It was only upon a close examination that one could detect the deep red and comparatively small areas caused by the fungus.

The case reported by Roeckl in 1884 is quoted by Kitt in his *Lehrbuch der Pathologisch-Anatomischen Diagnostik* (Stuttgart, 1895), and is cited here to show that there may sometimes be a closer resemblance to lung plague. In Roeckl's case, the lungs of a cow presented extensive hepatization, to which was added fibrinous pleurisy. There were hæmorrhages in the lung, lymph stasis and extensive distention of the interlobular connective tissue, with inflammatory infiltration; thus giving the "marbled" appearance. In addition, there were in part of the lobes numerous, isolated, sharply circumscribed nodules of hempseed size, and on the bronchial mucous membrane isolated ulcers 4-8 mm. across coated with a friable mass of tissue débris. Each nodule was found to contain at its centre an aspergillus colony with the mycelial threads radiating out into the surrounding tissue. The hepatization was due to the proximity of numerous nodules and accompanying changes in the parenchyma, consisting in capillary ectasis, hæmorrhage, and infiltration of leukocytes.

Cultivation and description of the Mould.—The aspergillus fumigatus is readily cultivated artificially. It grows on almost any of the ordinary culture media used in bacteriology, but the reaction should be acid, as it grows poorly in alkaline media. The well-known Raulin's fluid is perhaps the best material for culture, especially where the aspergillus must be isolated from mixed growths, as in the examination of sputum, &c.

Sabouraud's solution of maltose, prepared according to the following formula, also gives good results:

Maltose, ...	3.70 grams.
Peptone, ...	0.75 gram.
Distilled water, ...	100.00 c.c.

To this may be added gelatine or agar to harden it, the latter being preferable, as the aspergillus grows best and forms fruit best at 37° to 39° C.

For ordinary use no media give better results than potato, with or without glycerine, and a paste made by rubbing up crumbs of stale bread in water. Growth is more rapid, however, in Raulin's fluid than in any other medium, mycelium appearing in from five to twelve hours, and spores forming in twelve to fifteen hours. The growth is first a velvety white, soon becoming a delicate bluish green, which grows darker, and on Raulin's fluid changes after some days to a dark brown. Cultures on potato retain their green colour for a long time, while those on bread paste become brown in time. Cultures retain their vitality for many months unimpaired, and will give growth even after three or four years.

Figure 1.—A mass of fruit heads and free spores from a scraping of a nodule. Glycerine preparation unstained. × 400.

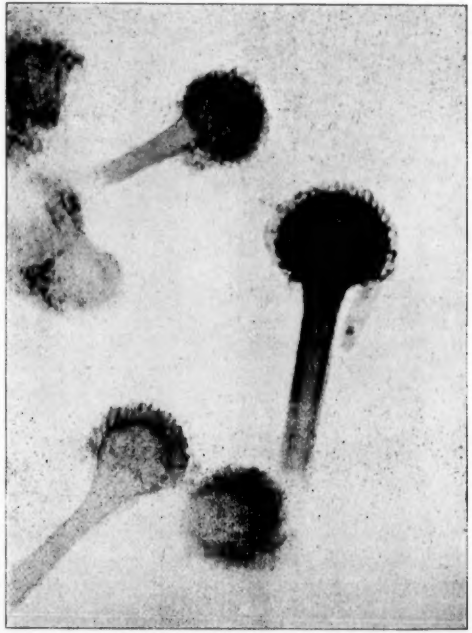

Figure 2.—The same as No. 1, but more highly magnified. × 500.

Figure 3.—Section through nodule in lung showing actinomycotic form of mould. Stained by Lithium carmine and Weigert's fibrin method. × 50.

Figure 4.—A section through nodule in lung showing brush-like forms and mycelium in cross section. Stained by Lithium-carmine and Weigert's fibrin method. × 150.

Spores do not form below 20° C., and like the mycelium require free access to oxygen for their best development. They measure 2.5μ to 3μ in diameter. In nature the spores are widely distributed, but seem to be especially abundant in grain and vegetable matter. They have considerable powers of resistance to heat and to chemical agents. They are killed by a temperature of 60° C. in five and a half hours, moist heat, and by bichloride of mercury 1 to 1000 in fifteen minutes.

The aspergillus fumigatus is differentiated from other species by its colour in cultures, the high temperature at which it grows, the size of its spores, and by its pathogenic power. In practice, the aspergillus glaucus is the one most likely to be confounded with it, but it may be recognised by its ability to grow at low temperatures, its delicate green colour, the large size of its spores—9μ to 15μ in diameter—and its lack of pathogenic power.

Case.—The animal under consideration was a Jersey cow six years old. She was bred and raised on a farm near Philadelphia, and was never off of this farm until sent to the Veterinary Hospital a short time before she died. The herd of which this cow was a member numbers about eighty animals. The milking cows are kept in the basement of a large stone barn. The cow stable is lighted on three sides, but not in such a way as to allow the rays of the sun to reach more than a small fraction of it. The cows are fed from an artificial stone floor, and are confined in stanchions with no partition to separate them from one another. The hay is thrown down into the stable from a loft above; the floor is frequently strewn with land plaster and the atmosphere of the stable is often loaded with dust.

This cow was in bad condition for six months, she was not thrifty, her coat was rough, the skin tight, the nutritive condition bad. During the last two months emaciation was more rapid and the animal coughed considerably, especially after eating. The cough was dry and harsh. The appetite continued, but the flow of milk diminished to about one-fourth of the previous volume. Suspecting tuberculosis, she was tested with tuberculin but gave no reaction. She was treated with tonics but did not improve; on the contrary, her condition became worse, and about two weeks after the test an obstinate diarrhœa developed that could not be controlled by the ordinary farm treatment, and the owner, concluding that the cow was worthless, decided that he would destroy her. In order that the animal might be observed more closely, a request was made that it should be sent to the Veterinary Hospital of the University of Pennsylvania. This was done. Upon arrival at the hospital, it was found that the cow would not eat, and she was weak and depressed; respirations laboured, and from forty to sixty per minute. Pulse rapid. Percussion of the chest walls gave a sound that, if anything, was clearer and louder than the normal percussion sound. Upon auscultation it was found that the vesicular and bronchial murmurs were considerably increased in intensity and accompanied here and there by sibilant rales. She coughed violently at times. Six days after she came to the hospital the breathing became more rapid and difficult and the pulse very much accelerated. The animal did not eat, grew weak rapidly, and died four days later, or ten days after admission to the hospital.

Autopsy.—The animal was much emaciated. The mucous membrane of the small intestine was catarrhal and showed a small amount of erosion. All the organs were normal except the lungs, one of which was removed to the laboratory for minute examination. The most striking feature on

Figure 3.—Section through nodule in lung showing actinomycotic form of mould. Stained by Lithium carmine and Weigert's fibrin method. × 90.

Figure 4.—A section through nodule in lung showing brush-like forms and mycelium in cross section. Stained by Lithium-carmine and Weigert's fibrin method. × 150.

external examination was the extreme amount of emphysema. The lobules were separated from each other as much as 3 to 5 mm., and even at some distance from the borders light could be seen through these crevices on holding the lung up before the eyes. On the surface, the subpleural connective tissue was distended in large blebs. Upon palpation the lung crackled and numerous hard nodules could be felt. On section a curious picture was presented, numerous dark red nodules being seen, the surrounding lung appearing normal in colour. In each lung there were from fifty to sixty of these nodules, from 5 to 12 mm. in diameter. Most of them were dark red, and closely resembled partially organised blood clots. However, on crushing a portion in glycerine between two slides and examining under the microscope, they were found to be made up almost entirely of a felted network of mycelial threads. Between these large nodules were numberless smaller areas of much the same colour, 1 to 2 mm. in diameter, not perceptible to the touch as nodules, but which were of the same character, and were no doubt foci of recent origin. These were seen especially well in portions of the lung which were preserved by Pick's method, the slight bleaching of the tissues bringing them into relief. On opening some of the interlobular emphysematous spaces, small, whitish, mouldy-looking patches were noticed on nodules which bordered the cavity. Scrapings from these patches were made up entirely of perfect fruit hyphæ, with myriads of spores (see Figs. 1 and 2). The diagnosis of a mould mycosis was in this way made at once, and confirmed by cultures and examination of sections. Cultures were made on glycerinated potato, bouillon and plain agar, by opening a nodule with sterile instruments, and tearing out a small portion of the centre, which was transferred to the culture tubes and placed in the incubator at 39° C. Abundant growth was obtained on the potato by the end of thirty-six hours, white at first, and soon changing to yellowish green, then to dark green. The growth in the bouillon and agar was slow. Plates and flasks of bread paste were made, and these with potato were employed for all subsequent cultures.

The formation of the fruit hyphæ was studied, and the spores measured a number of times, being from 2.5μ to 3.5μ in diameter. By these means the culture was identified as the aspergillus fumigatus. Our experiments on other animals were limited to the inoculation of one rabbit, into the aural vein of which $\frac{1}{2}$ c.c. of a suspension of the spores was injected. The animal died in forty-four hours, and from the liver and kidneys cultures were recovered. All of the organs were examined in sections, but only in the same two was mycelium detected.

Microscopic examination.—The nodules were hardened and embedded, some in celloidin and some in paraffin. Various staining methods were tried, hematoxylin and eosin, carbol-thionine, Gram, and lithium carmine with Weigert's fibrin stain. Good results were obtained with all, but the carmine and Weigert gave the most beautiful picture, and by this method the fungus was most perfectly demonstrated, the spores and mycelium taking on a deep purple colour. The histological picture was studied mainly in sections stained by hematoxylin and eosin. The bronchial epithelium was normal in places, but, for the most part, the columnar cells have been replaced by a sort of membrane, which appears to be made up almost entirely of a felt-work of mycelial threads. From this membrane hyphæ grow out into the lumen of the bronchus, and here, owing no doubt to the supply of air, fruit hyphæ arise, with perfect sterigmata and spores.

There is no cellular or other exudate, and very little débris. The under surface of this membrane is of looser texture, and contains some cellular infiltration made up of round cells, leukocytes, proliferated connective cells, and red blood corpuscles. The adjacent structures are closely filled with a cellular infiltration of the same description, with a quantity of mycelium, this extending to the neighbouring alveoli, which, under a low power (× 80) appear to have preserved their outline; but with greater amplification (× 625) are seen to have lost all their normal structure, showing clumps of homogeneous irregular masses, which stain faintly with eosin, and are probably of connective tissue origin.

In these areas the mycelium has followed the alveolar wall as a trellis, the tissue seeming to oppose no obstacle to its advance. Within the alveoli is a finely granular débris, with some coarser particles, probably the remains of cells. In sections stained with carbol-thionine large numbers of mast cells are seen in the alveolar walls. Bordering these degenerated areas are alveoli which have retained their normal structure, and are filled with a network of fibrin holding in its meshes a few cells—leukocytes and septal cells. In other parts of the sections are areas resembling those just described, but in which all anatomical landmarks have been destroyed, so that it is impossible to tell whether or not the spaces seen are bronchi.

Some sections show a widespread interstitial and alveolar hæmorrhage, the blood showing a considerable increase in the number of leukocytes. The capillaries are congested and areas of œdema with thickening of the alveolar walls are not uncommon.

There is peri-bronchitis and arteritis, while in some sections arterial thrombosis is seen, the thrombus being penetrated by mycelium, though no fruit is found. Areas are also found in which the alveoli are filled with a cellular exudate producing consolidation and thickening of the alveolar walls.

Emphysema, both interstitial and vesicular, is marked, and often extreme. Around the borders of the interstitial cavities is a distinct zone made up of red blood cells, leukocytes, and a homogeneous material, which is yellowish both in fresh as well as stained sections. These areas contain very little mycelium. All sections show a small amount of anthracosis. The appearance of sections varies in different nodules, and in the same nodules as they are taken further and further away from the centre. In general the fungus is thickest at the centre, so thick in many instances that the lung tissue is hidden entirely, and grows less as we go outwards. The tissue changes noted, formation of fibrin, &c., take place in a zone beyond the greatest growth of the fungus. In other nodules the fungus is evenly distributed throughout, following the alveolar walls. In these the tissue changes are slight. At times the fungus grows in dense, brush-like clusters, closely resembling actinomycosis under a low magnification (Fig. 3). This form is considered to show a marked reaction and resistance on the part of the animal, and a lowered vitality in the fungus. When found it indicates that the aspergillosis is a primary, and not a secondary or terminal affection. No giant cells were found in any section.

Fruit formation was not observed in the substance of the tissues at any time. It was observed most frequently in bronchi, which were for the most part denuded of their epithelium, and next in emphysematous cavities, where it could be detected in clusters by the naked eye. Fruit was also found in sections, in spaces the nature of which it was impossible to deter-

mine accurately. Wherever the formation of fruit was seen there were innumerable free spores as well as those still attached to the sterigmata, but in no case were spores detected in the substance of the tissues.

In many sections, especially those from near the centre of the nodules, the mass of mycelium was so dense that the proper structure of the tissues was obscured. Besides the dense growths resembling actinomycosis already described, other brush-like clusters, not unlike them, were frequently seen (Fig. 4). These differ from the former in being somewhat less compact, and in the fact that from their periphery numerous hyphæ run out into the surrounding tissues, whereas, in the actinomycotic form the masses are sharply defined, and only here and there a few threads grow out beyond the cluster. Their appearance suggests that they may be actinomycotic forms which have finally overcome the resistance of the tissues. Emphysema is less marked in the neighbourhood of the latter. These differences are well brought out in the micro-photographs. When a cluster is obliquely cut we have a mass of closely set cut ends of mycelium in cross section, as seen in the left corner of Fig. 4.

The cow was examined carefully for the lesions of tuberculosis, and in one lung some four or five caseous and calcareous nodules 1 cm. in diameter were found, in which the tubercle bacillus was demonstrated, but no mycelium could be detected. In no part of the lung was there co-existence of two infections.

The fact that the animal did not react to tuberculin, though tuberculosis was present, is noteworthy, and suggests that the mould infection may interfere with the test,—a source of error to be guarded against.

We have reported the case at some length, as being of unusual interest. We have been unable to find any record of a similar one ever having been observed in America, the literature on the subject in this country being limited to two cases in birds, and one case reported by Osler to this Society in 1887, in which mycelium was found in the sputum of a woman suffering from bronchial asthma.

We consider the case one of primary aspergillosis for the following reasons :—

1. The aspergillar nodules were by far the most extensive lesions found, and amply sufficient to account for the symptoms and death.

2. No other lesions were found which could have caused the symptoms, the tuberculous nodules being few in number and confined to a small portion of one lung. They were also evidently not progressive.

3. The actinomycotic forms of the aspergillus were found in a number of the nodules, indicating strong resistance on the part of the tissues.

In conclusion, we wish to express our thanks to Dr. C. Y. White, of the Pepper Clinical Laboratory, for assistance in the histological examination of the nodules, and to Mr Wm. H. Walmsley for his beautiful micro-photographs.

We have used freely the article on "Pulmonary Aspergillosis," by Rolleston, in Allbutt's "System of Medicine," the Monograph of Saxer, and especially the most admirable work of Rénon, to the authors of which we make grateful acknowledgments.

WOUNDS AND WOUND TREATMENT.[1]

BY TREVOR F. SPENCER, ESQ., M.R.C.V.S.

MR. PRESIDENT AND GENTLEMEN, — When our esteemed Secretary honoured me with an invitation to read a paper before you, I found myself confronted with two difficulties. The first was the selection of a subject calculated to be of interest to the gentlemen it is my privilege to address to-day, and the second a sufficiency of leisure to devote to the matter when the choice had been made. After much thought I decided that the subject which I am bringing before you to-day is one which has not been "over-done" at our meetings, and one into the discussion of which each and all of us may enter. It represents, too, a branch of the healing art which has made rapid strides during recent years, and therefore the results demand our close attention.

It is readily acknowledged by those best qualified to judge that the practitioner of veterinary surgery is handicapped in the matter of up-to-date wound treatment in many ways which do not obstruct the efforts of the human surgeon; and this will be appreciated when the temperament, intelligence, surroundings, &c. of the two classes of patients are taken into consideration. It is undeniable that the healing of wounds which a few years ago must have proved fatal is an every-day accomplishment on the part of the present practitioner of veterinary surgery; but at the same time it must be admitted that, so far, we have not taken full advantage of those means which have been placed at our disposal for combating wound infection, suppuration, and other evil consequences of injury to the tissues of our patients.

Some surgical wounds with which the veterinary surgeon has to deal are, by virtue of their position and the temperament of the patients, incapable of being subjected to a strict method of aseptic management; neither do the results of these wounds warrant the trouble and expense of such treatment, inasmuch as they heal in a satisfactory manner, even when antiseptic measures have been of the most meagre kind or altogether neglected. For example, the wounds occasioned by the operation of castration. But the fact that we find ourselves unable to treat each and every wound on the principles of asepsis or antisepsis in no way excuses our neglect to adopt these methods in those many cases in which no obstacles present themselves; and I hope to demonstrate that in all cases of wound treatment in which these principles can be practised, the damaged tissues heal more quickly, and with far less discomfort to the patient, leave less cicatrix, are much less trouble to manage, and are immeasurably more capable of repair without fatal or even serious consequences than those treated in any other manner.

When the results which prevailed previous to 1867 are contrasted with those of present-day surgery one marvels that it were possible in those days for a wound of any magnitude to end otherwise than fatally. Antiseptics were then unknown, and every wound was attended, in a greater or lesser degree, by suppuration, erysipelas, septicæmia, pyæmia, and hospital gangrene. Immediately previous to 1867 the death rate consequent upon limb amputation—I am now speaking, of course, of human surgery—was

[1] Read at a meeting of the Midland Counties Veterinary Medical Association on August 8th, 1900.

nearly 50 per cent.; falling to 15 per cent. in the four succeeding years, during which antiseptics had been discovered and successfully applied by one whose name will remain immortal as that of one of the greatest benefactors of the human race—Sir Joseph, now Lord Lister.

Before proceeding further it is necessary to define the exact meaning of several terms which occur frequently in this essay. The more important are the following:—

Septic literally signifies "to make putrid." The word no longer has this restricted meaning, inasmuch as any wound may be in a septic condition, whilst it is quite free from putridity or putrefactive changes of any kind. A septic wound is essentially ***non-sterile***, and is therefore the seat of pyogenic or other bacteria, irrespective of the class to which the bacteria may belong, or of the amount of mischief which they are capable of producing.

Antiseptic.—An antiseptic is an agent which prevents the growth and development of pathogenic bacteria, and is to be distinguished from a

Disinfectant, from which it differs in the important particular that the latter alone has the power of killing the organisms outright.

The fact that all ***healthy*** unexposed tissues of the animal body are constantly in a state of strict sterility, constitutes one of the chief means by which aseptic surgery is rendered possible, for so long as our efforts have only to be directed to the prevention of contamination from without, the difficulties of keeping a wound free from harmful organisms are not insurmountable; but if the reverse were the case, if bacteria were conveyed to the wound by the blood current or existed in the tissues themselves, it would be idle on our part to attempt their exclusion through the medium of the air. Of course there *are* conditions of the body—unhealthy conditions—in which pyogenic bacteria exist in the blood current, and are capable of producing mischief in a wound or other injury. In this I venture to think the surgeon has a reasonable explanation of his experience that the satisfactory healing of a wound is frequently interfered with during the course of, say, a specific fever or other malady. Encouraged with this knowledge, he declines (if possible) to operate at a time when his subject is affected with serious systemic disturbance. Herein, too, lies an explanation of abscess formation following a simple bruise, in which no breach of surface exists. Such unhealthy states of the animal organism are probably and fortunately rare, but that they do occasionally exist is a fact which must not be lost sight of. In this connection Watson Cheyne says: "The absence of bacteria from the various tissues, organs, and fluids of the healthy animal body has been ascertained by the experiments of Lister, Pasteur, and Tyndall. Investigations show that bacteria are absent from the blood and from the various organs—from the kidneys, bladder, and urethra, and from the urine of healthy individuals; from the liver, gall, bladder, and biliary ducts, and from the bile, from the salivary glands, and from the saliva in their ducts, from the acini of the lungs and smaller bronchioles, and from the expired air provided it is not mixed with the secretions of the mouth or air passages. They are also absent from the mammary glands and from the milk in its ducts, and from other organs and secretions which it is unnecessary to specify.

I have no intention, gentlemen, of entering into an elaborate description of the various micro-organisms affecting wounded structures; it is, however, of the utmost importance that the veterinary surgeon be well

acquainted with the more common pathogenic bacteria against the development and life of which his services are to be directed.

In investigating the sterility or otherwise of a wound under his care, the specialist in human surgery frequently adopts the most exhaustive courses of procedure, the state of the injury as to the presence or absence of bacteria being ascertained by the aid of culture media. These precautions may be, and doubtless are, advisable or necessary when dealing with serious wounds in the human subject; certain it is that they are impracticable, and probably unnecessary, on the part of the veterinarian. I think the every-day experience of veterinary practitioners teaches them that their patients enjoy, to a great extent, a natural immunity from those serious effects of bacteria-infected wounds which often prove so critical to the human subject; but it is within our knowledge, too, that this immunity is lost under certain ill-defined conditions of our patients' bodies. "Pasteur found that fowls did not die of anthrax unless they were made ill, and their temperature lowered by immersion in cold water."—*Lockwood.*

The fundamental principle of aseptic surgery (to which there is no exception) is that the presence of pus, in however minute quantities, denotes that the injury is in an unsatisfactory condition. Of course I know full well that many, even most wounds in veterinary subjects suppurate to a greater or less extent, but this furnishes no reason why we should not improve our methods, and so, at least, reduce the number. Pus used to be spoken of as laudable; it is *never* laudable. The creamy fluid to which this name is applied is the least objectionable of the various kinds, because its nature shows that it is coming from a granulating surface through which bacteria can only permeate with great difficulty; therefore to be pleased with the appearance of the so-called laudable pus amounts to an admission that you have had to depend upon nature and the phagocytes to erect the granulation barrier for you.

BACTERIA COMMON TO WOUNDS.

Bacteria are divided into three great classifications, viz.:—

Aërobes, i.e., those which grow in the presence of free oxygen.

Anærobes—those which will not grow in the presence of free oxygen; and

Indifferent Bacteria—those which grow either in the presence or absence of free oxygen.

Bacteria are capable of exerting their baneful effects either by their own migratory and other actions, or through the effects of a highly poisonous and ill-understood group of bodies, or, more properly speaking, material, manufactured by them, to which the term ptomaines is applied. It is important to understand that many constitutional derangements consequent upon wound infliction (traumatic fever to wit) are traceable to the actions of these ptomaines, in order that we may the better appreciate the necessity of keeping our wounds as far as possible in a bacteria-proof condition. Examples of the more common bacteria affecting wounds in veterinary subjects are *Staphylococcus pyogenes aureus*, *Staphylococcus pyogenes albus*, *Streptococcus pyogenes*, *Bacillus septicus*, *Proteus vulgaris* and the bacillus of tetanus. It is not within the province of the essay to enter into an exhaustive account and description of these organisms, albeit a short summary of the characters may not be out of place.

Staphylococcus pyogenes aureus is spherical in shape, indifferent as to its choice of free oxygen, grows upon culture media in grape-like clusters, with a golden hue on the surface of the culture exposed to the oxygen of the air. Its chief interest to the veterinarian lies in its close etiological connection with all suppurative processes and with the conditions known as septicæmia and pyæmia.

Staphylococcus pyogenes albus is hardly to be differentiated from the organism previously described, except that on culture media its growth is white in colour. It is very closely allied with *aureus*, and intimately connected with all suppurative processes.

Streptococcus pyogenes is indifferent as to its choice of free oxygen, and grows in the form of chains. It is probably a spore-bearing coccus, and is therefore difficult to destroy by the aid of chemicals. It is closely connected with the etiology of septicæmia and pyæmia in animals, and appears to be even more pathogenic for man, in whom it is the cause of suppurative lymphatic mischief, a peculiarity which I have not heard of in veterinary subjects. This coccus is believed to have an important share in the etiology of equine pneumonia. In this connection I should like to say that I think the time is near at hand when we shall inoculate against the ravages of streptococci by injecting our subjects with the blood of animals which have been rendered immune by inoculation with the attenuated virus. If this can be done, as there is reason to believe it can, then pyæmia following strangles and contagious equine pneumonia will no longer enjoy their present serious importance.

The staphylococci, probably owing to the cluster-like shape which they assume, chiefly confine themselves to the surface and immediate neighbourhood of a wound, whereas the streptococci, by virtue of their chain-like arrangement, have a tendency to invade the lymph spaces and interstices of the tissues.

The three organisms just described are of the greatest importance, in that they are intimately connected with all suppurative processes—in fact they may be said to be the sole causes of pyogenesis.

Bacillus septicus.—This organism is of the greatest interest to veterinarians, in that it is probably the cause of a fair percentage of the mortality consequent upon wound injury to their patients. Resembling the tetanus bacillus in its mode of existence without the host, it is conveyed to a wounded (and often slightly wounded) area through the medium of filth, dung, dust, &c. Strictly an anærobe, it chiefly shows its disastrous effects in small wounds of the punctured order, where by its difficulty of access and tenacity of life it not infrequently puts a speedy end to the life of its host.

A case recently came under my notice in which a small punctured wound in the axilla of a young horse killed the patient in six days. The injury was less than three inches in depth, and would only admit of the entrance of one's finger. The wound was neglected by the owner until on the third day the whole of the structures of the animal's left fore-quarter were the seat of serious complication. Although every effort was made to thwart this palpable ptomaine poisoning (the measures adopted consisted of opening the orifice, scraping the wound, painting with crude carbolic acid, continuously irrigating, &c.), septic intoxication speedily ensued, and ended in the patient's death. An inquiry into the origin of the wound led to the discovery that it had been caused by a spiked railing which was

coated with dry mud, &c. removed from an adjacent pond. A post-mortem examination held immediately after death revealed no appreciable pus; the whole of the pectoral and shoulder muscles were in a state of semi-putridity, the subcutaneous cellular tissue containing quantities of stinking gas.

Bacillus septicus is a spore-bearing organism, and therefore difficult to thwart by the aid of antiseptics, and hard to kill even with disinfectants.

Proteus vulgaris is the organism found in wounds emitting a putrid odour. It is what is termed a saprophyte, and although doubtless capable of producing septicæmia and other ill-desired results, is hardly worthy of serious consideration, seeing that the most elementary attempts at wound treatment do not permit of the existence of putridity.

Tetanus bacillus closely resembles the *Bacillus septicus* in that it is an inhabitant of dry dung, dust, earth, &c., and like it, too, is anærobic. It is spore-bearing, the latter growing at the end of the organism, giving it the appearance of a drum-stick. The comparative rarity of tetanus at the present day is distinctly attributable to the antiseptic treatment of wounds. It is decidedly more uncommon to-day than was the case even ten years ago, a fact which can only be explained by the greater favour with which the use of bacteria-destroying agents is regarded by practitioners of veterinary surgery in the management of their wound cases. The very small minority of surgical cases which are now followed by tetanus is a matter for the sincerest congratulation, seeing that at a time by no means remote the veterinary surgeon before commencing an operation had reason to warn his client of the possibilities, and even probabilities, of this disastrous disease.

Having mentioned the more common of wound-infecting bacteria, it is important to note that their dose, condition of entry to a wounded area, and the amount of resistance to their invasion on the part of the tissues, play an important part in warding off their evil consequences, or the reverse, as the case may be. In those wounds in which large quantities of pathogenic bacteria take up their abode, the chances of serious results are, as one would expect, greater than those in which their number is smaller. The state of the wounded area as regards bruising, tearing, the effects of irritants, &c. is important as rendering the parts suitable to the growth of organisms. In this connection Watson Cheyne says:—"Where the tissues have been much bruised at the time of the operation or accident, their vitality will have been greatly diminished, and they will more readily succumb to the attack of the organisms than if the injury done to them had been limited to the microscopic layer caused by the action of the knife. This is a point of immense importance to bear in mind in operating on parts where the entrance of organisms cannot be prevented. Under such circumstances the manipulations of the surgeon should be particularly gentle, so that the tissues which are exposed to the action of the organisms should be in as healthy a condition as possible."

I think this knowledge enables us to explain the activity of pyogenic bacteria in a surgical wound such as that occasioned by the removal of a scirrhous spermatic cord, an operation necessarily attended with some tearing and bruising of tissue in a part of the body impossible to maintain in a state of asepsis. It shows us, too, that the employment of irritant or crude dressings in a *fresh* wound is to be avoided.

Without entering into a discussion of the phenomena of inflammation,

much that may at first appear inexplicable in regard to a wound is readily understood by a knowledge of Nature's own unaided mode of repairing injuries, and of dealing with the myriads of foes which attempt to invade every breach of surface in the animal body. This attempt on the part of Nature to form a barrier to the entrance of organisms through a wounded surface is rendered possible owing to the existence in the blood current, and in the tissues themselves, of large cells capable of transporting themselves to a wounded structure in need of their aid. During the early stages of inflammation (which at once commences after infliction of an injury) the white corpuscles or leucocytes of the blood push their way through the walls of the capillaries bordering the injury, and array themselves around the damaged tissue, where their vocation is to destroy the organisms with which they meet. Being gifted with amœboid movements, they surround the bacteria and kill them within their structure. These phagocytes, as the leucocytes are called, vary in numbers in proportion with the vitality and functional activity of their host, a fact which explains the want of resistance to wound infection experienced by a weakly patient. A knowledge of these processes (phagocytosis) enables one to appreciate the fallacy of the older doctrines, that the vitality of a wounded patient should be lowered by a diet of poor value, seeing that the effect of this would be to decrease the number and activity of the body scavengers.

MEDIA THROUGH WHICH WOUNDS ARE CONTAMINATED.

When one considers the surroundings and conditions of life of the lower animals, one is not surprised that bacteria of various kinds readily invade accidental wounds, and that suppuration is therefore rather the rule than the exception. Even in the improbable event of their not being infected at the time of their occurrence, they speedily become so through the medium of the hair and skin from contamination in the form of dust, dirt, mud, &c., through the medium of dirty water employed for the ostensible purpose of cleansing them, or as a result of the application of popular and often bacteria-laden nostrums (stuffing the wound with cob-webs, &c.). With regard to surgical wounds the sources of infection may also be very numerous and must ever be borne in mind. The veterinary surgeon is so frequently operating upon parts in a state of advanced sepsis or even putridity, that his instruments when improperly cared for become a real danger. Some years ago I considered myself directly responsible for the death of a thorough-bred mare from septic metritis, owing to my having carelessly used a knife in a simple case of embryotomy, which had not been sterilised after opening a strangles abscess. Our sources of contamination are found in impure sutures, ligatures, sponges, &c.

Before leaving this part of my essay I should like to say that it is believed by many to-day, and formerly was universally accepted, that the tissue would not tolerate the presence of a foreign body within them, a belief which is only in a measure a true one. It has been abundantly proved that a foreign body may be introduced beneath the skin or into the substance of a tissue without giving rise to suppuration, provided it be sterile at the instant of its entrance, and introduced under strict aseptic precautions, and provided, of course, that the tissues be healthy. This is the strongest argument I can advance in favour of aseptic surgery, and one which all of us can prove for ourselves.

(*To be continued.*)

Notes.

PASTEUR INSTITUTE FOR INDIA.

The Pasteur Institute has been opened at Kasauli for the treatment of persons bitten by rabid animals. The Director of the Institute at Kasauli is Major D. Semple, R.A.M.C., who was Assistant Professor of Hygiene at Netley for several years, and has been trained in bacteriology and studied the anti-rabic treatment in Paris. The treatment itself at Kasauli will be entirely gratuitous, but as it does not involve detention in hospital, patients will have to make their own arrangements for board and lodging. Excellent accommodation for all classes can be found at this station. Soldiers bitten by rabid animals will no longer require to be sent from India to Paris for treatment. Major Semple has already had eight men of the South Staffordshire Regiment sent for treatment from Subathu, and applications for admission have been made in the case of sepoys and other natives from various parts of the Punjab and the North-West Provinces.

THE AUXILIARY FORCES.

The 3d Volunteer Battalion (Duke of Connaught's Own) Hampshire Regiment were inspected at Leigh Park, the seat of Sir F. Fitzwygram, Bart., M.P., near Portsmouth, on Saturday, 15th ult., when 1450 officers and men were on parade. A novel feature of the inspection was the presence of fourteen ladies, forming the Battalion Nursing Division of the St. John Ambulance Association, who travelled to Leigh Park in the troop train, and, under the supervision of Surgeon-Major C. Knott, were placed in charge of the section of a field hospital that accompanied the battalion. Four men belonging to outlying companies fainted on the ground and were conveyed by bearers to the hospital tents, where they were left in charge of the nurses. Colonel W. H. Moberly, the Inspecting Officer, and Colonel Crichton, commanding the Portsmouth Volunteer Brigade, visited the hospital and expressed their approval of its equipment.

Messrs. HINKLEY & Co., Veterinary and Sanitary Chemists, have removed to Langdale Works, Glengall Road, London, S.E.

We heartily congratulate Messrs. HAUPTNER, Veterinary Instrument Makers, 53 Luisen Strasse, Berlin, on being awarded the sole Grand Prix in the class of "Medicine and Surgery" for Veterinary Instruments, and also the Gold Medal in the "Agriculture" class for "Apparatus for the Nursing of Animals."

We would draw the attention of our readers who may be called upon to "vaccinate" stock, as a preventive from "Black-leg," that they may obtain a complete outfit of apparatus and "vaccines," carefully prepared and thoroughly reliable, from Messrs. PARKE, DAVIES & Co., Chemists, 111 Queen Victoria Street, E.C. We recently had occasion to use some of their preparations whilst in America, and were thoroughly satisfied with them.

Extracts.

FILARIOSA OF THE SUSPENSORY LIGAMENT OF THE HORSE.

BY M. J. PADER, V.S., 1ST CLASS, 19TH REGT. ARTILLERY, NIMES, FRANCE.

THE essay is divided into three parts — historical, the study of the parasite and the lesions produced, and the sequelæ.

The discovery of the parasite is by all authors attributed to Dr. Bleiweis, of Vienna, but in the *Veterinarian* of 1838 (Hugh Ferguson, on Idiopathic Disease of the Tendon—*Veterinarian* XI. page 520, 1878—*Recueil Vétér.*, 1897, page 321) there is a communication by Hugh Ferguson on a Special Lesion of the Perforans Tendon. This author states that he found these lesions in portions of the tendons situated in the synovial sheath at the carpal and metacarpo-phalangeal articulations. He says, "I have on different occasions found a cavity of variable dimensions in the substance of the tendon. It communicates with the sheath, and contains a large number of tendinous fragments of irregular length, which from their form and the manner in which they are matted together could easily be taken for long, thin, yellow worms. In fact, when I showed them to a celebrated French veterinary surgeon and anatomist, without hesitation he at once declared them to be parasites." From what we know at the present time, it appears that without doubt the French veterinary surgeon was right, and that the parasites were the *Filaria reticulata*. Ferguson does not mention any name, but no doubt he was alluding to M. Rigot.

II. The second portion of the paper is a description of the parasite.

Up to the present, entire specimens have only been obtained from loose connective tissue only, broken over from the suspensory ligament, but these have been perfect enough for identification. The parasite is a true *Filaria reticulata* (Diesing, and Creplin, M.M. Neumann, and Railliet take the same view.

III. The third portion is a description of the symptoms caused by the parasite. The term "filariosa," adopted by M. Pader, appears to be well chosen.

He describes the naked eye post-mortem appearances, viz., tumefaction of the ligament and the scraped-out cavities in its substance; also the conglomerated marks of the remains of the parasites, which were all noticed by Ferguson. He states that, in the neighbourhood of Nimes, this lesion of the ligament was observed in 80 out of 100 horses, mules, and donkeys, and the reason that it has not attracted more notice is that the enlargement during life has been put down to distention, or strain, whereas no trace of such injury can be found in the dead animal.

M. Barrier has propounded the question if true distention or strain of the ligament may not sometimes be due to this primary cause.

M. Pader produces statistics that go a considerable way in showing that such is the case. He also endeavoured to show that there is a relation between "filariosa" of the suspensory ligament and hypertrophy of the subcarpal.

The paper ends with discussing the question of prophylaxis, but as little is known about the evolution of the parasite, it is impossible to formulate anything definite. The paper ends with the proposition that perhaps some obstinate cases of enlargement of the ligament that resist active treatment may in reality be due to fillariom.

(Translated from *Recueil de Médicine Vétérinaire*, 30th August 1900.)

JOSHUA A. NUNN,
Vety. Lt. Col.

USE OF ANTIFEBRINE IN INFECTIOUS PNEUMONIA.

BY MM. GUILLEMAIN ET CADIX, 3D CHASSEURS.

We have used this drug in many of our cases—10 grammes daily in an electuary, divided into 3 to 5 doses, as advised by MM. Cadeac and Guinard, *Journal de l'Ecole de Lyon*, 1894, and have arrived at the following conclusions :—

First. The drug has a powerful antithermic action, as proved by the following cases :—

Case I.—Morning temperature, 3d day, 40·2° C. Antifebrine administered 3 times. Evening temperature, 39·3°.

Morning temperature, 4th day, 39·8°. Antifebrine administered 3 times. Evening temperature, 38·6°.

Morning temperature, 5th day, 39·2°. Antifebrine not administered. Evening temperature, 39·5°.

Case II.—Morning temperature, 4th day, 39·9°. Antifebrine three times. Evening temperature, 38·2°.

Morning temperature, 5th day, 39·1°. Antifebrine not administered. Evening temperature, 39°, instead of 38·2° as it was the evening before at the same hour.

Second. That the action of the drug is irregular and fleeting :—

Case I.—Morning temperature, 2d day, 40·3°. Antifebrine administered at 11, 1, and 3 o'clock. Temperature, 4 P.M., 39·5°; at 6 P.M., 40·6°—a rise of 1·1° in two hours.

Morning temperature, 3d day, 40·8°. Antifebrine 3 times. Evening temperature, 40·8°.

Case II. — Morning temperature, 3d day, 39·9°. Antifebrine administered at 7, 8, 9, 10, 11 o'clock. Temperature gradually declined 1·9° at mid-day, but at 6 P.M. again 40·4°.

From these cases it would appear that 10 grammes is too little, and that, as it is rapidly eliminated, the drug should be administered frequently throughout the day.

(Translated from *Recueil de Médecine Vétérinaire*, 30th August 1900.)

Joshua A. Nunn,
Vety. Lt. Col. A.V.D.

ON THE DETECTION OF HORSE FLESH IN SAUSAGES.

Abstract from the 13th Annual Report on the operations of the Sanitary Department of the City of Glasgow.

BY PETER FYFE, ESQ., F.R.S.E., CHIEF SANITARY INSPECTOR.

As it is thought that a considerable trade is done in the sale of horse sausages, I obtained two samples which we strongly suspected were made of horse flesh, and submitted them to Mr. Tatlock, one of the city analysts. His report to me is of considerable interest, and shows the difficulties your inspector has to contend with in any endeavour to bring home to the vendors of this stuff the punishment they ought to receive, under the Sale of Horse Flesh Act, for selling the same without due notification over or on their premises. I may mention that Mr. Trotter, the Veterinary Surgeon to the Corporation (Police Department), is of opinion that the sausages in question were pure samples of minced and spiced horse flesh.

Mr. Tatlock says :—

"DETECTION OF HORSE FLESH IN SAUSAGES.

"Please find enclosed certificates for two samples sausages—Nos. 140, 142—which, you will observe, I have returned as genuine, not because I believe that they do not contain horse flesh, for, on the contrary, I am under the impression that they do. The whole question of the detection and determination of the proportion of horse flesh is in such an unsatisfactory condition that there was no other course open, and I did not follow it without first observing and studying particularly the literature of the subject, as well as making a thorough practical investigation with a view of ascertaining the reliability or otherwise of the published tests and methods.

"The literature on the subject is pretty extensive, but I need not trouble you with more than a few references.

"It will assist in clearing the ground if I set out by directing your attention to the fact that the presence of glycogen in horse flesh forms the basis not only of all the tests that have been proposed for the detection of horse flesh, but also of the determination of its proportion. None of the tests or methods hitherto proposed are capable of distinguishing between glycogen and dextrin, and the latter, as you know, is easily produced, under fairly ordinary conditions, from ordinary starch or substances containing starch, such as bread, pepper, &c., and these are common ingredients of sausage.

"The following are the references to which I would direct your attention :—

"1. *Analyst, vol.* 19, *page* 24.

"'The Chemical Recognition of Horse Flesh. W. Brautigam and Edelmann.—The method is based on the use of the well-known iodine reaction of glycogen, a body which is a constant constituent of horse flesh.'

"2. *Analyst, vol.* 20, *page* 252.

"'On the Chemical Recognition of Horse Flesh. W. Niebel.—The author criticises the methods of Edelmann and Brautigam, on the ground that the reaction with iodine is uncertain, since glycogen is also found in the flesh of dogs, cats, and very young calves, in the livers of cattle, and in meat extract to the amount of 1·5 per cent. In old sausages from horse flesh these chemists always obtained the glycogen reaction, although that substance would usually be completely decomposed under these circumstances. There is also an uncertainty in the reaction caused by the fact that the dextrins resulting from the starches give a similar coloration with iodine, and no means of removing them is known. The red colour with iodine is not sufficient proof of the presence of glycogen, which should be isolated in pure condition. Nevertheless, the iodine coloration, and the occurrence of more than 1 per cent. of grape sugar in the fat-free substance, points to the presence of horse flesh in a sample, even when all the glycogen has been decomposed.'

"3. *Analyst, vol.* 21, *page* 231.

"'Horse Flesh and Horse Fat. R. Fruhling.—Not being able to obtain conclusive results with Edelmann's glycogen reaction.'

"4. *Analyst, vol.* 22, *page* 160.

"'The estimation of Starch and Glycogen in Meat Preparations. A. Bujard.—In the author's opinion these figures show that only in exceptional cases (where the amount is large) can the glycogen be taken as conclusive of the presence of horse flesh, especially when the latter is mixed with other kinds of flesh.'

"In view of the uncertainty and unsatisfactory character of these tests, as thus disclosed, I decided to make an independent investigation of the whole question, and for that purpose I procured the following samples:—

"1. Fresh horse flesh.
"2 Horse flesh two days in pickle.
"3. Horse flesh sausage, new.
"4. Horse flesh sausage, smoked, new.
"5. Horse flesh sausage, smoked, old.
"6. Ox flesh, fresh.

"I have operated with all these samples, and have applied to each of them the tests and methods proposed by the various writers, with the nett result that I find it impossible to either detect or determine the proportion of glycogen in old smoked horse flesh. There is no difficulty in getting the brown coloration with fresh horse flesh, and even in the inside portion of the partially pickled horse flesh, but not in the outside portion, from which the pickle had dissolved the glycogen. A strong brown coloration was easily obtained in the case of the new sausage made from pickled horse flesh, and a slight but a distinct reaction with the new smoked horse flesh sausage. In the case of the old smoked horse flesh sausage, however, there was absolutely no reaction, and the same result was got with the two samples 140 and 142. The ox flesh gave no result.

"You will not fail to observe that even if a reaction had been obtained in the case of the two samples received from you, there would still be no means of distinguishing it from that given by dextrin, and the same applies to the quantatitive estimation of glycogen. No one has proposed any method of distinguishing between the two, either qualitatively or quantitatively. Niebel, as you will see above, although alive to the fact that both dextrin and grape sugar are transformation products of common starch, does not even suggest a method of distinguishing between dextrin and glycogen, nor between grape sugar produced from starch or dextrin and that which is a product of glycogen.

"To take an actual case for illustration:—Supposing the reaction had been obtained in the case of the two samples you submitted to me, and I had proceeded to make a quantitative determination, I would be obliged to admit, in evidence, that I could not tell whether either the one or the other was due to glycogen, and an expert for the defender could quite easily produce evidence that the thing could not be done in the present state of knowledge.

"In a prosecution under the Act it would be necessary to state the proportion of horse flesh present, and the quantitative estimations of glycogen which I have made show results so unsatisfactory that they could not be sustained as reliable in evidence.

"I presume it is for reasons such as these that Local Authorities and Public Analysts have hitherto refrained from taking steps to institute prosecutions under the Act for this form of offence."

CONTAGIOUS DISEASES ANIMALS ACTS, 1864 AND 1890.

SUMMARY OF RETURNS OF OUTBREAKS for the Four Weeks ending 15th September 1900.

ENGLAND AND WALES.

Swine Fever.	Glanders (including Farcy).	Rabies.	Anthrax.	Foot and Mouth Disease.	Sheep-Scab (for month of August).
Outbreaks 98 Slaughtered 602	Outbreaks 114 Attacked 161	None.	Outbreaks 32 Attacked 76	Outbreaks 3 Attacked 61	Outbreaks 8

SCOTLAND.

Outbreaks 1 Slaughtered 10	Outbreaks 1 Attacked 1	None.	Outbreaks 5 Attacked 5	None.	Outbreaks 2

IRELAND (Five Weeks ending 15th September).

Outbreaks 25 Slaughtered 310	Outbreaks 1 Attacked 1	Dogs Attacked 1 Other Animals 0 Destroyed 0	None.	None.	Outbreaks 15

Communications, Books, Journals, &c., Received.

Agricultural Journal (Cape of Good Hope); Berliner Thierärztliche Wochenschrift; La Clinica Veterinaria (Milan); Deutsche Thierärztliche Wochenschrift; Tannoform in Veterinary Medicine (March); The Sanitary Journal; Scottish Medical and Surgical Journal; Veterinary Record; La Riforma Veterinaria; Le Mois Scientifique (Paris); L'Echo Vétérinaire (Liège); Annales de Médecine Vétérinaire (Brussels); Johns Hopkins Hospital Reports; Journal of Comparative Medicine and Veterinary Archives; Recueil de Médecine Vétérinaire; Gazette Médicale de Paris; Modern Medicine; Johns Hopkins Hospital Bulletin; Messrs. Henry J. Dames, Clement Baxter, and James M'Kenny.